

TECHNOLOGY

REVIEW *May 1950*



technology review

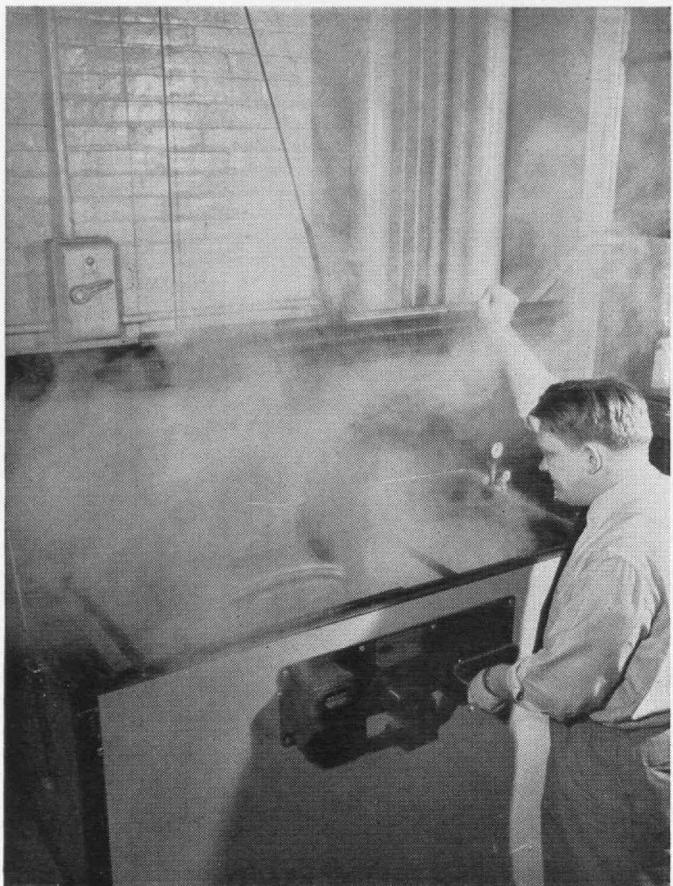
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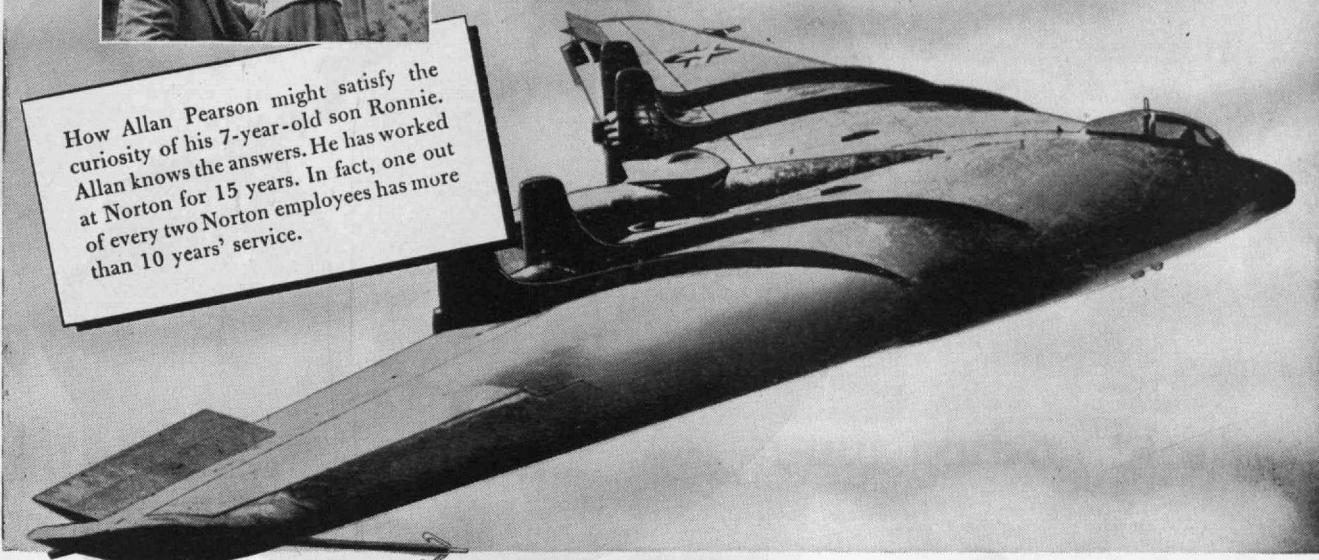
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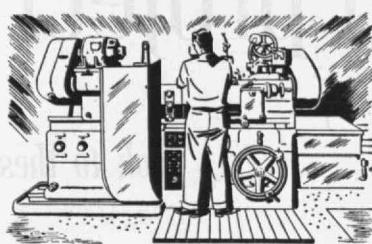


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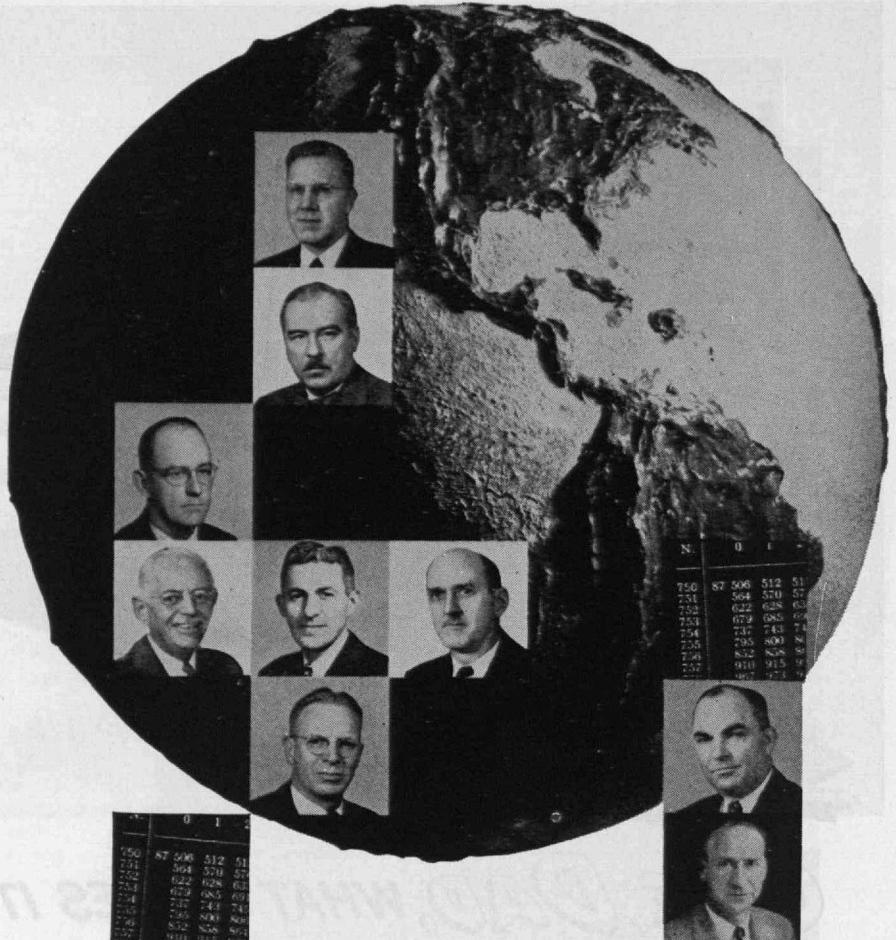
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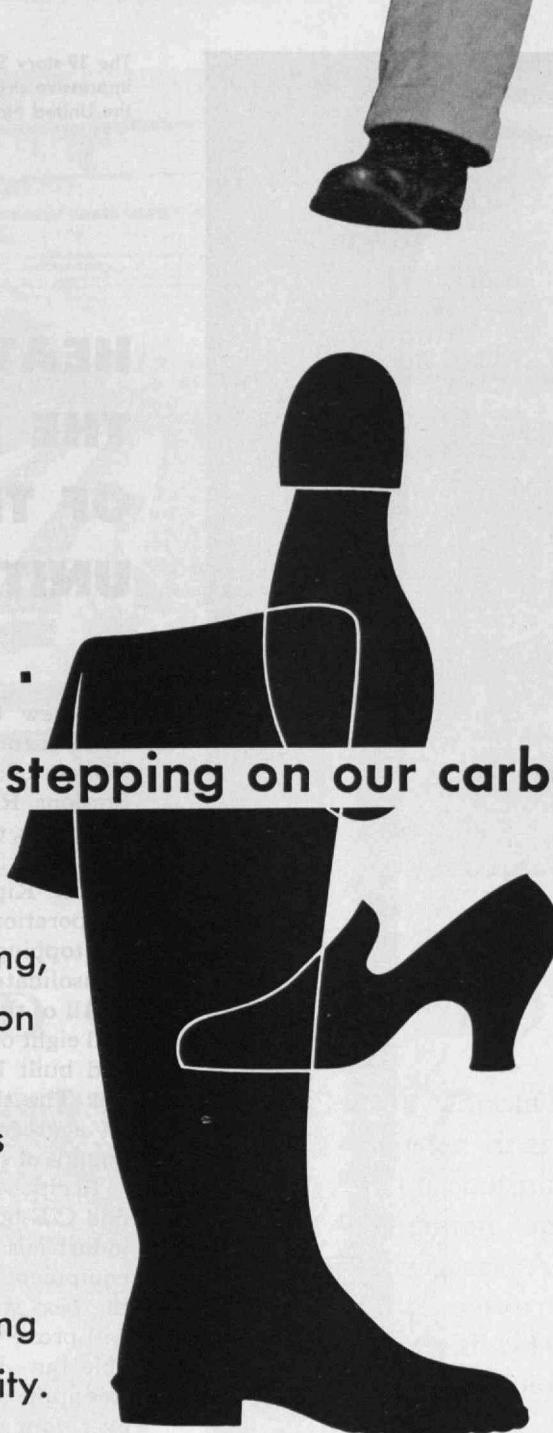


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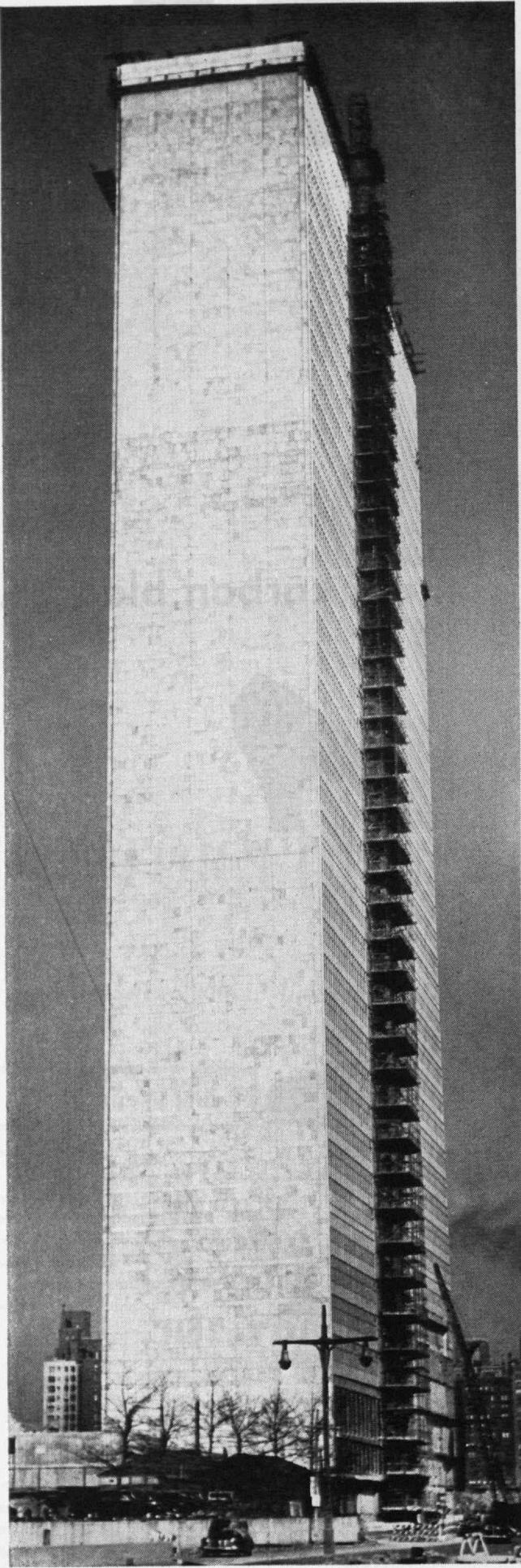
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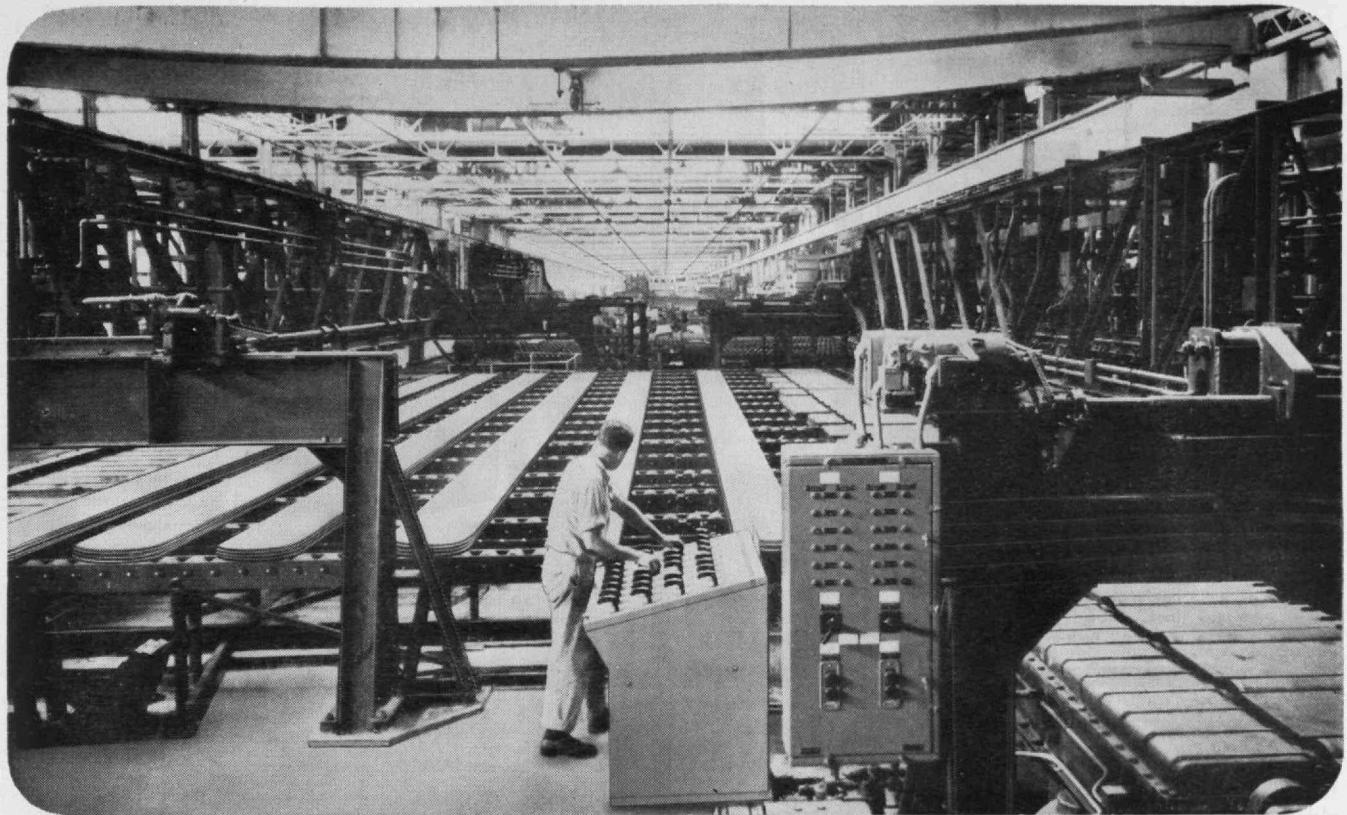
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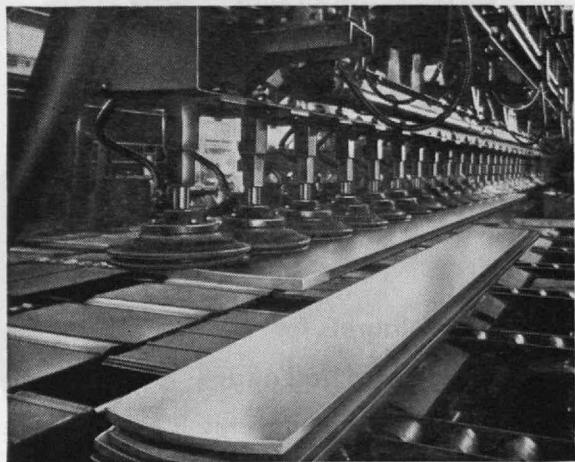
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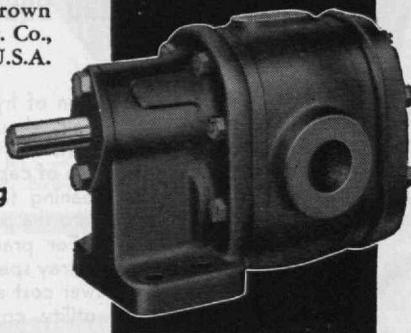
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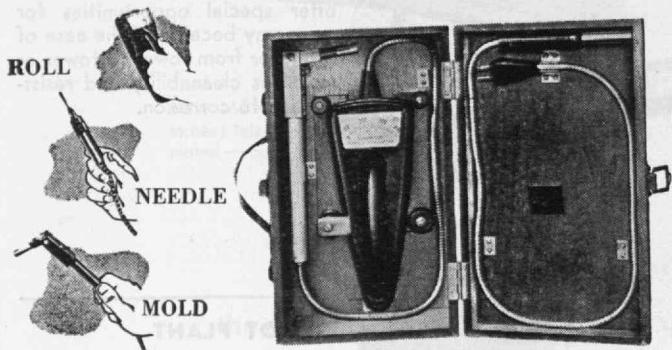
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THE TABULAR VIEW

Dedication. — This May the Institute's new Charles Hayden Memorial Library will be formally dedicated in ceremonies which are intended to emphasize the part that this new building will play in fostering the humanities at M.I.T. Readers of *The Review* will find a preview of the new library in the article (page 361) by JOHN E. BURCHARD, '23, Dean of Humanities, and VERNON D. TATE, Director of Libraries, both of whom have had an active role in designing, furnishing, and administering this latest of M.I.T. educational buildings. ¶ The varied experience of Professor Burchard includes degrees in architecture (S.B., 1923; S.M., 1925) from M.I.T., a decade of architectural and engineering design culminating with the vice-presidency of Bemis Industries, Inc.; directing the Albert Farwell Bemis Foundation from 1938 to 1944 at M.I.T.; becoming director of libraries, 1944 to 1948, and dean of humanities since 1948. He is the author of several books, and played a major part in administering last year's Mid-Century Convocation at M.I.T. ¶ Dr. Tate, a native of Illinois, is a graduate of the University of California (A.B., 1929; A.M., 1930; Ph.D., 1934). In 1934, Dr. Tate spent the year in research and microphotography in Washington, D.C., and when the National Archives neared completion was given charge of duplicating and photographic reproduction activities of this agency. In 1947 he came to M.I.T. to become librarian. He is now director of libraries.

Mensuration. — Upon the occasion of the 100th anniversary of his birth, the life of Edward Weston, pioneer in electroplating, electric street lighting, and particularly in the accurate measurement of electrical quantities, is reviewed (page 369) by DAVID O. WOODBURY, '21. Mr. Woodbury comes unusually well prepared for his present assignment. As "one of D. C. Jackson's boys," he may very well have had his first contact with Edward Weston not alone in the Dynamo Laboratory but from one who knew him personally. For many years, Mr. Woodbury has been a free-lance writer of technical and scientific topics, and has written a dozen books. His latest, in fact, is *A Measure for Greatness — A Short Biography of Edward Weston* which provided background material for his present story. Several of the illustrations in this issue of *The Review* (and which also appear in Mr. Woodbury's latest volume) have been supplied through the kindness of Allan R. Cullimore, '07, President Emeritus of Newark College of Engineering, who knew Mr. Weston intimately.

Education. — A realistic, but nevertheless optimistic, attitude is expressed by C. C. FURNAS in the second and concluding portion of his article (page 373) entitled "American Education in a Quandary." Readers of *The Review*, who are engaged in strictly technical work, undoubtedly will be especially interested in the suggestion of Dr. Furnas that the greatest likelihood (Concluded on page 354)



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MAIL RETURNS

Word on "D. C." Jackson

FROM MABEL F. (MRS. DUGALD C.) JACKSON:

It was most thoughtful of you to send the advance copy of the sketch about Edward Weston [see page 369] to my husband, and we both appreciate it greatly. I read it in its entirety to Mr. Jackson to his pleasure and satisfaction. Every evidence that he is still more or less in the midst of affairs — not entirely "out of the running" is a comfort.
Cambridge, Mass.

Reader's Disapprobation

FROM WILLIAM B. DEVINE:

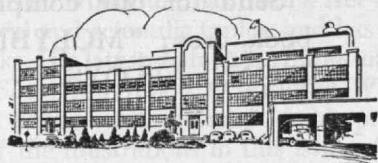
We examine with interest your forthright and factual publication. Hence in the April, 1950, issue on page 300 we viewed with some alarm Charles Batterman, diving coach at Harvard University, in four distinct phases of a "back dive." We arrived at certain delicate conclusions: (a) There is some whimsical association between "back" dives and the Trend of Affairs on page 301; (b) Science and sports are incompatible.

Philadelphia 7, Pa.

THE TABULAR VIEW

(Concluded from page 352)

of finding a satisfactory solution to the educational problem of the day is in breaking down the cubicles of specialization, in cross-fertilizing each field of knowledge with thoughts from every other field, and in passing on to the community this co-operative exchange of ideas originating in the colleges and universities. A few paragraphs of Dr. Furnas' article in this issue have also appeared in a companion article "Civilization in a Quandary" in the February, 1950, issue of *School Science and Mathematics*. His present observations are based not alone on professional work in which he has been engaged, but also in community educational activities.



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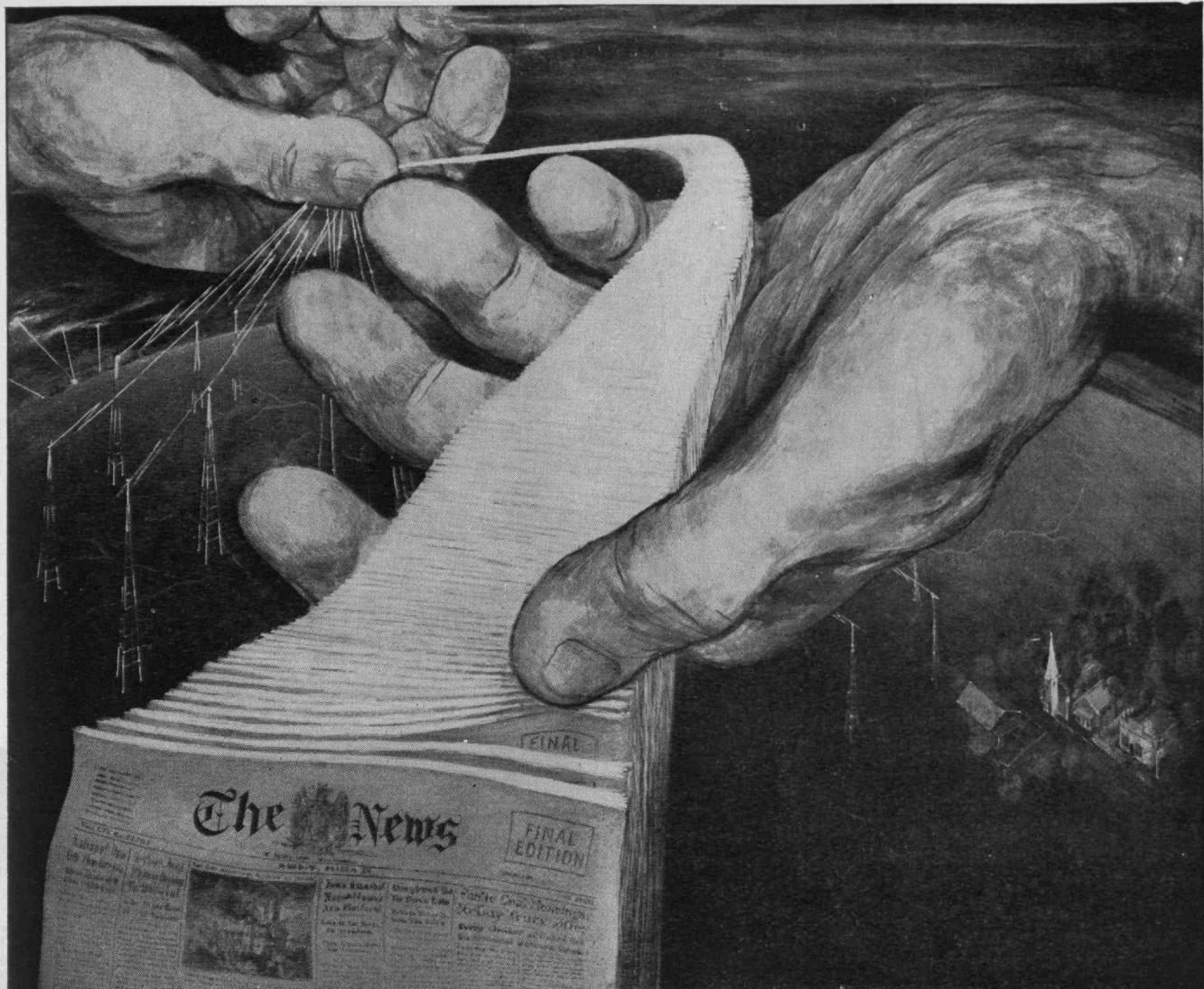
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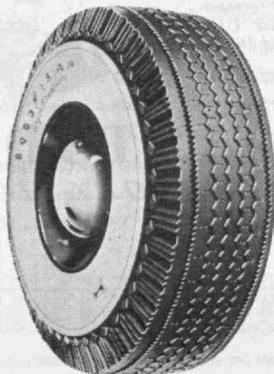
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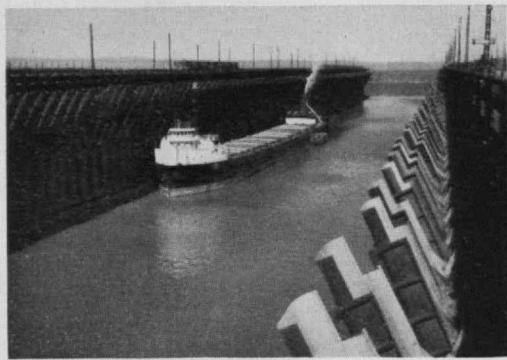


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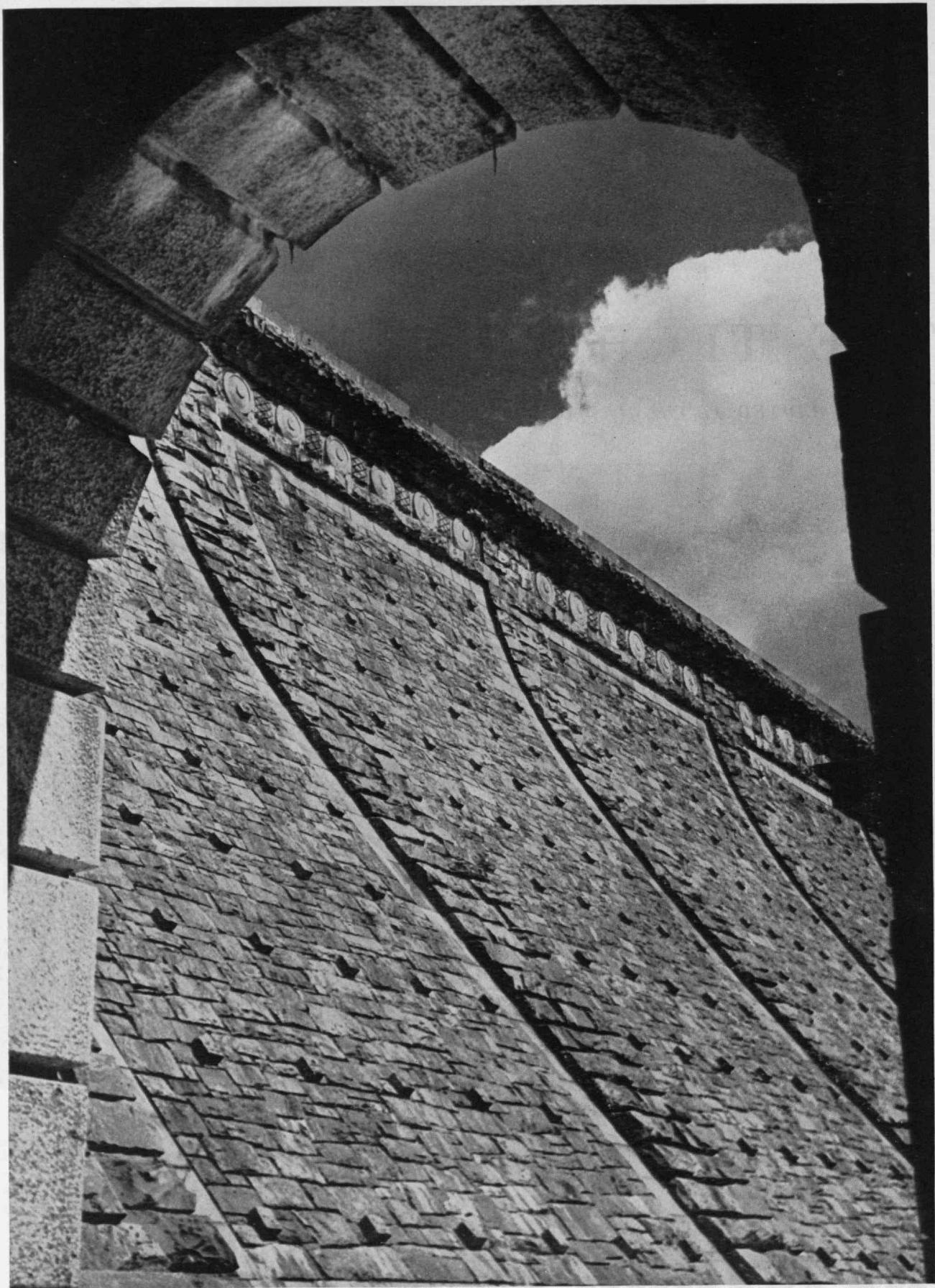
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CONTENTS *for May, 1950* VOL. 52 No. 7

EXHIBITION GALLERY, CHARLES HAYDEN MEMORIAL LIBRARY <i>Photograph by M.I.T. Photographic Service</i>	THE COVER
ARCHWAY AT KENSICO DAM · <i>Photograph by W. Eugene Smith from Black Star</i>	FRONTISPICE 358
THE CHARLES HAYDEN MEMORIAL LIBRARY — A PREVIEW By JOHN E. BURCHARD AND VERNON D. TATE	361
<i>The latest of the Institute's educational buildings is to be dedicated on May 19</i>	
SCIENTIFIC REBEL — STUDY OF A PIONEER SPIRIT By DAVID O. WOODBURY	369
<i>Edward Weston, pioneer electrical instrument maker, was born in England just 100 years ago</i>	
AMERICAN EDUCATION IN A QUANDARY — II By C. C. FURNAS	373
<i>Advancement of our general education fostered by breaking down the barriers which specialization erects</i>	
THE TABULAR VIEW · <i>Contributors and Contributions</i>	352
MAIL RETURNS · <i>Letters from Review Readers</i>	354
THE TREND OF AFFAIRS · <i>News of Science and Engineering</i>	359
THE INSTITUTE GAZETTE · <i>Relating to the Massachusetts Institute of Technology</i>	378

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W. Eugene Smith from Black Star

Bold Encouragement

... to sufferers of the New York water shortage is provided by this archway at Kensico Dam.

THE TECHNOLOGY REVIEW

Vol. 52, No. 7

May, 1950



The Trend of Affairs

Who's Who in Science

Of the 50,000 names included in the eighth edition of *American Men of Science - A Biographical Directory* (Lancaster, Pa.: The Science Press, 1949), 40 per cent appear for the first time. Furthermore, the total represents a sharp acceleration of the growth exhibited by previous editions over the first half of the Twentieth Century. According to a statement by the editor, Jaques Cattell, in his preface to the eighth edition, this remarkable burgeoning is ". . . to a large extent due to the great advances made in industry, as well as the expanding program in academic institutions." Other influences, not mentioned by Mr. Cattell, are radical changes in the method of collecting names, with a resultant widening in scope of the directory.

Prior to the eighth edition, the compilers of *American Men of Science* had practiced independent selection of names. For the current edition, however, compilation was co-ordinated with preparation of a national register of scientific and technical personnel by the National Research Council for use by that organization and the Federal government "in connection with their participation in the National Science Program and for studying American scientific personnel resources." Expense was shared. A questionnaire covering six letter-size pages was sent to individuals appearing in prior editions of *American Men of Science*, to the rosters of technical societies, and to similar groups. Of the 26 items in the questionnaire, only 15 provided data of the nature published in *American Men of Science*. Enclosed with questionnaires were forms asking for suggestions of other names. Then, when the individuals thus nominated received their questionnaires, they found enclosed the same form asking for additional names. Although of a haphazard nature, this procedure no doubt yielded many new names that could not otherwise have been obtained.

The preface to the first edition of *American Men of Science* in 1906 announced the intention to list those individuals doing "research work in the natural and exact sciences." Some persons were to be included who engaged in activities such as teaching, administration, writing of textbooks, or practice of applied sciences, but only if their work "contributed to the advancement of pure science." In 1910, the second edition announced a narrowing of scope, by selection with greater strictness of individuals engaged in the natural and exact sciences. This rigidly limited field remained the ostensible scope of *American Men of Science* through succeeding editions up to, but not including, the present one. As a necessary result of the new method of compilation described, the current edition includes many persons who engage in technology rather than in pure science, and who do no research.

Another innovation in the eighth edition is the elimination of "starring." In the first edition, a star or asterisk was placed next to the name of approximately a thousand individuals whose work was thought to be the most important. In subsequent editions through the seventh, about 250 persons who had attained the indicated status in the interim since the previous edition were starred. The potentially controversial nature of such a bestowing of laurels is obvious. In fact, by the time preparations for the eighth edition were begun, the existing system of selecting names for starring was recognized as obsolete, and a committee of the American Association for the Advancement of Science was appointed to revise the procedure. This was done and a nomination sheet was distributed; but the returns were judged to indicate that even the revised system was not suitably equitable. Therefore, the practice of starring was discontinued, although resumption with future editions is under consideration.

The limitations from which *American Men of Science* suffers are those inherent in any biographical directory. Some names are omitted that should be in-

cluded; but among these are individuals who refuse to fill out questionnaires, and any dragnet procedure that would yield a truly complete list of scientists would no doubt be prohibitive in cost. Data in biographies come only from the individuals themselves and are not verified; hence listings may be colored by the modesty, or lack thereof, of the respondents. But any attempt to rectify this shortcoming would surely be infeasible, perhaps inappropriate. The great increase in the number of names included has reduced the type size to the lower limit of legibility, and has increased the thickness of the volume to the upper limit of facility in handling. Nevertheless, *American Men of Science* remains the indispensable reference work that it has been since the early part of this century, and its editorial staff are to be commended on able discharge of a difficult undertaking.

Oliver Heaviside

MAY, 1950, marks the centennial of the birth, in England, of two men who were destined to become world figures in electrical science. One of these was Edward Weston, whose biography is chronicled in this issue. The other, born in London on May 13, 1850, was Oliver Heaviside. As one of the outstanding "electricals" of the late Nineteenth and early Twentieth Century, Heaviside's name was associated with theoretical investigations in electricity which led to practical applications in communication systems; he is equally well known for his conception of operational calculus and of the conducting layer in the earth's upper atmosphere.

Beginning his career with the Great Northern Telegraph Company in a position which we would now regard as that of an electrical engineer, Oliver Heaviside gained a sound knowledge of the practical problems of telegraphy in the 1870's. At the early age of 24, increasing deafness forced him to leave this work, and he devoted the rest of his life to theoretical investigations in electricity.

Partly because he used mathematical notations of his own devising, partly because his conclusions were regarded as being intuitive instead of being worked out in rigorous detail, and, perhaps, partly because of a tendency to be somewhat outspoken at times, he had difficulty in obtaining publication of his papers. His electrical contributions were published in two volumes entitled *Electrical Papers* in 1892, however, and they brought him recognition from men of science. His theoretical work on transmission theory laid the foundation for the later application of loading of telephone lines which made distortionless long-distance wire communication possible.

Perhaps best known of his works is his three-volume treatise, *Electromagnetic Theory*, published between 1893 and 1912. Within these volumes one may find, as side remarks to his principal message, salty comments on the persons, practices and attitudes of his day, of which today's technical literature is devoid.

To account for certain observations in the propagation of radio waves over the earth's surface, Heaviside suggested the possibility of a conducting layer in the

earth's upper atmosphere. Such a layer was subsequently discovered and is now known as the ionosphere, although it was formerly known as the Heaviside layer.

Surface Tension of Metals

THE surface-tension forces of solid metals are being measured for the first time as a result of recent recognition of the importance of these forces in powder metallurgy. The concept of surface tension in liquids is familiar to anyone who has blown soap bubbles or observed that mercury droplets are round. Although it has long been known that solid surfaces must exhibit analogous forces, it is only within the past few years that an exact determination of their nature and magnitude has become important in scientific and technological investigations. Solid surface tension has now been recognized as one of the primary forces acting in such diverse fields as the selective flotation of minerals and the lubrication of bearings. In metallurgy, it is one of the causes of the migration of grain boundaries in polycrystalline metals; and it determines the size, the shape, and the distribution of particles which are produced by transformations in alloys.

A better understanding of the forces of surface tension in metals is expected to have important applications in the processing of metals. For example, welding and brazing techniques have been developed almost entirely by empirical methods in the past. When the surface tension of a large number of metals is known over a wide range of temperatures, it may be possible to improve techniques to achieve better welds with existing metals. Even more promising is the possibility that metallurgists may be able to "design" weld metals and metals to be welded which are able to fulfill specified requirements.

In the Metal Processing Laboratory, research workers became interested in solid surface tension in connection with the sintering of powder metallurgy compacts. Sintering is the phenomenon of densification and strengthening which occurs in these aggregates of metal powders when they are heated to temperatures below their melting points. It was found that the surface tension is the probable driving force in the process, but since no measured values had been published for any solid metals, it was not possible to distinguish between the possible hypothetical mechanisms of sintering.

A large piece of metal is not measurably deformed by the slight action of the surface tension even when it is softened by heat nearly to its melting point. But an equal mass of metal, finely powdered, possesses so much more surface that at high temperatures each particle, and consequently the entire aggregate, deforms a great deal. In flowing under the action of these very small forces, the "solid" metal behaves, in a sense, like a viscous fluid. Harry Udin, '37, Assistant Professor of Metallurgy, took advantage of this liquid-like behavior of solid metal to measure the surface tension of solid copper. If a fine wire is heated in a vacuum chamber to a temperature at which viscous

(Concluded on page 392)

The Charles Hayden Memorial Library

—A BRIEF PREVIEW

BY JOHN E. BURCHARD AND VERNON D. TATE

GALA ceremonies will commemorate the dedication of the Charles Hayden Memorial Library at M.I.T. on May 19. With the humanistic aspects of a library as the central theme, the festivities will be entirely appropriate for the opening of the new addition to Technology's library system. Nevertheless, emphasis of only one of its many facets cannot obscure the complete role which the latest facilities will play in the Technology community.

The Charles Hayden Memorial Library is the focal point for all M.I.T. library activities which extend across the campus, and, in fact, are carried on in seven different locations. All of these activities are essentially those common to university, as opposed to college, libraries. Occasionally a college library may possess a distinguished special collection which becomes a mecca for scholars in that field, but this is not the main purpose, nor should it be the main ambition, of such a library. Rather, to meet primarily the needs of the undergraduate, a good college library must have good-sized and well-balanced collections in all fields.

A university worth its salt must have such a library, too, but because it is also a center of research and scholarship, the university library is likely to contain several collections whose principal utility (or even whose only utility) is to serve a small company of scholars — sometimes a very small and special company indeed.

If, as is the case at M.I.T., the university is an educational institution of limited scope polarized around science and engineering, it is obvious that, for the most part, academic collections will be those that best serve

scholars in science and engineering. In these fields a further characteristic is to be observed.

Throughout the world the history of science and engineering is too much neglected, for the principal professional interest of most scientists and engineers is almost exclusively in the contemporary. A very large proportion of this interest will be in current professional publications, or, at the most, in periodicals which have appeared during the past 20 years. This general statement must not be taken too literally, however. In some fields, as in chemistry, it is only partly true. As a generalization, it may serve to enhance an understanding of the kind of library M.I.T. needs and has.

The library at this particular technological university poses multiple problems. It must be designed and operated to: (1) provide the broad basic materials for general undergraduate education; (2) supply the needs of undergraduates in professional curricula; and (3) serve graduate students and Faculty members who may be pursuing very advanced studies.

A rich collection of the great works of all time in literature, history, music, art, and the humanities is requisite to meet the general educational needs of the undergraduate, although a rich collection need not be exhaustive; certainly esoterica have little place. Much can be said in favor of a collection in which quality, rather than quantity, is the criterion corresponding to, and performing part of the function of, a good college library. In an engineering school, where there is always high incentive for professional work, those interested in humanities may perhaps be pardoned a little showmanship in setting forth the best features of such an accretion.

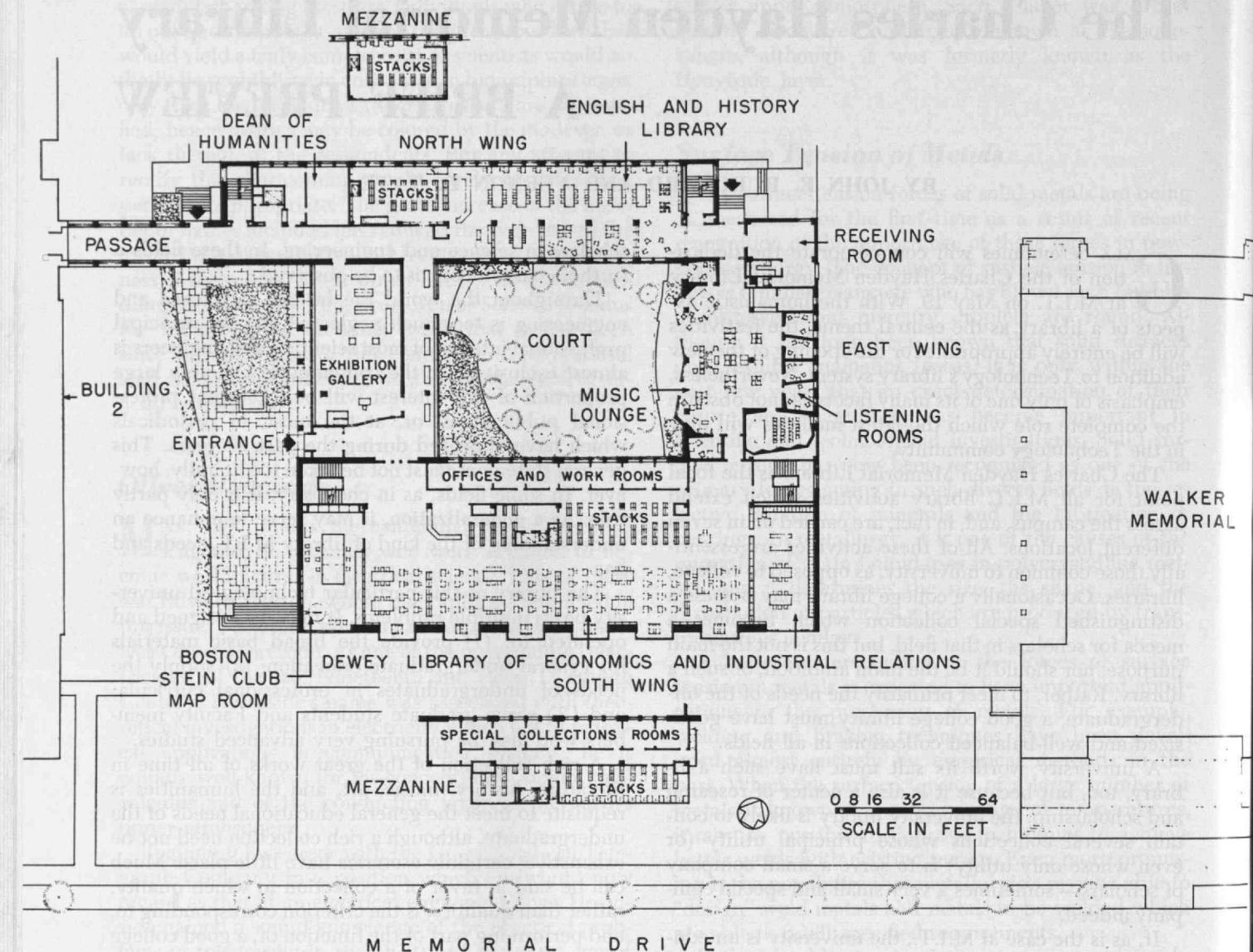
Thorough collections of books, both old and new, and of periodicals in the respective fields, are required for undergraduate study in the natural sciences, in engineering, in architecture and city planning, and in the social sciences. Collections serving these broad fields need not be as detailed and complete as those formed to serve the scholar. For the social sciences, good coverage should be provided in economics, political science, business administration, and, to a lesser degree, in social psychology, cultural anthropology, and sociology.

Graduate students and Faculty scholars who may be pursuing advanced studies at the Institute, and Alumni in professional fields, work predominantly in the natural sciences and in engineering. The Eastman Library in mathematics, physics, and chemistry, the Aeronautics Library, the Vail in electrical engineering, the Lindgren in ceramics, geology, and metallurgy, the Rotch in architecture and city planning, the Engineering and Naval Architecture Library, and the Biology Library admirably serve the professional



All Photos by M.I.T. Photo Service

The office of John E. Burchard, '23, Dean of Humanities, ground floor, north wing



First-floor plan of the Charles Hayden Memorial Library. The library, on Memorial Drive, faces the Charles River and is located between Building 2 of the main academic group (left) and Walker Memorial (right). The plan of the second floor is similar to that shown above. The Central Library is directly above the Map Room and Dewey Library; the Processing Room immediately above the Music Lounge. To the north, offices on the second, third, and fourth floors occupy the space above the English and History Library. Entrance to the building brings the visitor to the gallery and the inner court. On the third floor, the Library Lounge and seminar rooms are directly above the Processing Room.

needs of this group. In the social sciences, there are enough advanced students to have justified the development in the Dewey Library of significant collections in economics, industrial relations, and related fields. The Institute's collection in industrial relations is especially noteworthy.

A small percentage of the Faculty and fewer students are undertaking studies in the history of science or technology, or both, in relation to industry. Although all the materials for new researches are not ordinarily kept on the M.I.T. campus, interest in this field has justified acceptance from time to time by the Institute of notable historical collections. The historical part of Vail Library, the Hovgaard Papers in Naval Architecture, the Clark prints of ships, the Gaffield glass collection, the Dard Hunter paper collection, the Herreshoff marine design and engineering papers, the Kayser papers in spectroscopy, and recently the R.C.A.-Clark collection on the progress of radio com-

munication, are outstanding examples of historical collections available in the M.I.T. library. Except for the always needed indexes, reference and abstract volumes, the majority of the working utility of the M.I.T. library will be found in the 3,000 periodicals to which the library annually subscribes. As these grow older, some are bound, and the collection includes long runs of most major scientific and engineering journals. Frequently, the complete file of a significant periodical is available, beginning with publication of its first number.

It will be apparent that the M.I.T. library is called upon to serve the requirements of several different groups whose needs and habits usually differ widely.

Compared with the gigantic university libraries common in this country, M.I.T.'s library is not large. That of Harvard University, for example, holds more than 5,000,000 volumes; Yale University has nearly 4,000,000. Its 500,000 volumes places M.I.T. 41st or



A general view of the circulation desk (extreme left), Dewey Library. The alcove at the extreme right houses periodicals. Tables for individual and group use are provided. The three vertical panels hung from the ceiling will hold visual display material.



The Music Lounge (below), facing west into the inner court, provides facilities for live and recorded music. Individual listening rooms are at the left of this illustration.



42d in size among the national university libraries; but significantly it is by far the largest library located at an institution with the limited objectives which M.I.T. has adopted.

Major questions on how to use it most effectively are raised — even for a collection of this size. For library administration, for the purse strings, and for some users, especially the few who range across many fields, the easiest solution is to consolidate all holdings in a systematic arrangement in a central building. The most convenient solution for the individual scholar, especially if his interest can be clearly defined, would be a private limited collection in his laboratory.

The plan adopted by M.I.T. is a compromise between these two extremes. The plan has been in effect for a long time; it would be hard to turn back now, even if one wanted to, and there are few who do.

In effect, the M.I.T. system is constructed around a central and nine branch libraries. The Central Library provides over-all reference functions, duplication of most-used materials, storage of less-used materials in all fields, an Institute-wide union catalogue, and over-all administration and management for the entire system. The central management, for example, sets up all budgets, employs all personnel, orders all books and periodicals, processes them through cataloguing, and distributes them to the places of use.

These places of use are satellite branch libraries. The term "branch" is more accurate than "department" because few branch libraries serve one department exclusively, and none is directly responsible to a department for its administration. Rather, these specialized collections have been assembled partly in terms of the geography of the Institute, and partly in terms of the functional groupings of their material.

Thus the Eastman Library is centrally located with respect to the Departments of Physics, Chemistry, and Mathematics, and the juxtaposition of these collections is functional as well. The Rotch Library plays a similar role for the School of Architecture and the Department of City and Regional Planning. Geographically and functionally, the Aeronautics Library meets the needs of those working in the Guggenheim Aeronautical Laboratory. The Lindgren Library, on the other hand, houses materials in metallurgy and in geology, and was originally planned to meet the needs, functional as well as geographic, of the departments catering to these two fields. The quarters formerly occupied by the collection on economics are now central to the activities of the Departments of Civil, Mechanical, and Building Engineering and Construction, plus the Department of Naval Architecture and Marine Engineering. This branch library has the collections for these Departments, and operates on a partly functional arrangement. What was formerly Central Library, under the great dome, now houses the collections of the Departments of Biology and Electrical Engineering in two separate branch libraries. Both of these Departments are nearby.

It is the ambition of each branch to be able to have a high probability (sometimes we say 95 per cent without ever having checked it) of meeting the need of a specialist without recourse to any other collection, either within or without the Institute. Each collection grows every year and in due course any one would burst the present walls without rigorous culling. Girth control takes two forms. Some kinds of material (for example, the third edition of a famous textbook in electrical engineering now in its 11th edition) may be rejected outright; again, old bound is



The Industrial Relations Reading Room, of which about one third is shown, is a part of the Dewey Library.

In its second function, that of serving the professional needs of special groups for which no branch libraries now exist, the Hayden Library serves the needs of certain groups working in science and engineering. Collections for such groups are generally found in the large underground stacks in the basement of the Hayden Library.

Finally, the Hayden Library provides two branch libraries in the humanities and the social sciences. Both are situated on the first floor. They serve the fields of economics and social science, English and history, and music.

These are the library purposes of the Hayden building. But the building as a whole has the further and unusual function of serving as the laboratory of scholars in the humanities and social sciences. Offices for the M.I.T. Faculty in these fields have been provided in a building which is physically integrated with the library. There are also a number of individual study rooms within the library walls, which may be assigned to scholars who will be using the library a great deal, as well as seminar rooms, and a library lounge within the same complex. The Faculty offices are, for the most part, in the north wing; the studies, on the mezzanines of the south wing; and the seminar rooms and lounges, on the third floor of the east wing.

Hayden can be best understood by thinking of it as four buildings, connected at the corners, and enclosing a rather large open court. The south building faces the Charles River. The west building is nearest to, and parallel with, a portion of Building 2 of the main academic buildings. The north building is set on the inner quadrangle of the east campus and faces the Alumni Pool. The east building is adjacent to Walker.

The south building is two stories high but each story is high enough to include a mezzanine. The west building is one-story. The north building has one high story at ground level and three of lesser height suitable for offices. The west building has one high story topped by two floors of lesser height. Beneath all four buildings and the central court is a great basement.

The library has three entrances. The formal public entrance is reached by a wide sidewalk from Memorial Drive leading to an equally wide stair and sweep-

sues of important scientific periodicals (for example, *Nature*) which ought to be kept, but which are used so seldom that some delay is permissible, are removed from the branch libraries and deposited in the central.

This brief explanation of the branch and central system at the Institute makes it possible to describe more clearly the totality of purposes to be served by the new Hayden Library. Its many resources should not be obscured by concerts, or the exhibitions and displays of great literature that may confront the visitor when he first enters the building in search of reference material on engineering and science.

The new Hayden Library, therefore, has three general functions to perform, each distinct and yet a portion of an integrated whole: (1) it serves as the administrative unit for all library facilities at M.I.T.; (2) it serves as the primary source of reading and reference for those fields in which branch libraries have not been established, and as an overflow depository of less-used material which cannot be housed in the existing branch libraries; (3) it houses two branch libraries, in fields removed from the natural sciences and engineering.

As an administrative unit, the Charles Hayden Memorial Library receives all requests for the purchase of library material, does the purchasing, receives the material, catalogues and otherwise processes it, and distributes it to the appropriate final storage unit. Requests for loan of materials from other libraries are directed to, and filled by, it. It is the unit in which all forms of duplication of library materials are prepared, and reproduced by offset, microfilm, and other processes. It serves as the center of general reference in which one can find a union catalogue of all Institute holdings, including great collections of encyclopedias, indexes, and other reference and bibliographical materials. It contains the central reference department to which many telephone inquiries are directed every day. Finally, it contains the offices of the library administration.

The gallery provides a readily accessible, yet thoroughly secure, exhibition room for temporary exhibits on display at M.I.T. throughout the year. Beyond the glass walls may be seen the entrance to the Dewey Library.



ing terrace, from which one may enter the library directly. On making this entrance, one faces the inner court and finds the exhibition gallery on the left and the Dewey Library on the right.

If, instead of entering, the visitor continues north along the terrace, he will find a door leading into a glass-covered passage which connects the new building with the main group of academic buildings. Here, turning to the right, he will also enter the Hayden Library. At his left are stairs and an elevator leading to the Faculty offices above; at his right is the exhibition gallery with the English and History Library ahead.

A third entrance at the northeast corner leads to the Music Library. If one were to proceed through the latter, he would find himself in the east end of the Dewey Library. From this third entrance one may gain access to the English and History Library by going through a basement or second-floor corridor and coming out on the first floor at the second entrance described above.

ters the English and History Library from the west, he is immediately confronted by the card catalogue for this collection. To his left is the circulation desk. Behind this desk are stacks, both on the main floor and on a mezzanine. Among other things these stacks house the reserve book collection; and since the pressure for charging out and returning books is intense at some hours, a wicket window outside the library is used during rush hours. The library has windows on both sides. Alongside those to the north are a series of single tables each with a solid front partition to afford privacy, with larger tables near the center. Finally, on the south wall, where the windows are protected by light linen curtains and whence one views the court, the seating is most informal. Each column bay has a row of stacks projecting into the room from it and these book shelves form a series of alcoves in which the chairs are of the lounge type. It is a sunny and cheerful room, and like the others, has a dramatic color scheme — in this case, terra cotta and buff. As in



The Central Library is the main reference, catalogue, and administrative unit of the Institute's library system. Circulation desk is at the left background. Alcoves beyond the clock are for general reference source material. In the center of the room may be seen the main Institute union card catalogue.

At each of the four corners, stairs run from bottom to top floors. A public elevator is provided in the northwest corner and there is space for another at the northeast. An internal elevator is located in the center of the south building.

All of the spaces of the building are air-conditioned save for the top three floors of offices in the north building; air-conditioning equipment fills part of the basement and all of a large penthouse on the roof of the south building.

Each of the main rooms has some special features which are worth describing in more detail. As one en-

the case of the other public rooms, the English and History Library is connected to the basement by its own stair which gives access to its own stack for volumes not sufficiently in demand to justify shelving in the reading room itself.

The Music Lounge is a large and lofty room — an irregular polygon in shape — with walls and ceiling painted a dark, almost Shaker, blue. The illusion of space is enhanced by a thick green carpet. The west wall facing the court is made of large glass panels. Much light and afternoon sunshine enliven the area in daytime; at dusk and after dark concealed spotlights project cones of light in a regular pattern with ample illumination for reading. The circulation desk to the left of the entry is connected with a large record-storage room. Behind the desk complete studio-type reproducing, recording, and radio facili-



In the Dewey and Central libraries, large, glass-enclosed alcoves, with comfortable furniture, provide informal lounge chairs for reading. Each alcove is hung with drapes printed with M.I.T. motifs, and faces across the Charles River.

ties allow the Music Lounge to be used as a concert hall for recorded music. Around the periphery of the room are located seven individual listening rooms. Of these, six will seat from four to six people comfortably. Some of the rooms are as large as the living room in a modern small home, while the largest, a music seminar, will seat 20. The listening rooms have been carefully designed acoustically; no two walls are parallel; wood resonating panels alternate with absorbing surfaces and even the air-conditioning ducts are sound conditioned. Phonographs for regular or long-playing records are the best that the Institute could provide within its budget. Scores, books about music and musicology, and reference material are on shelves within easy access. Lounge-type furniture is provided throughout, and a number of phonographs identical with those in the listening rooms (but adapted for use with one or more pairs of earphones) can be placed in the main lounge for individual listening. On occasion the entire area can be used for live music, and in clement weather the courtyard itself can become an open-air auditorium. A small covered stage, opening from the west wall of the Music Lounge, is arranged for this purpose. Music is an important part of the educational process, whether as required listening for course work or purely for recreation. No more complete recognition of this fact could be given than the facilities embodied in the Music Lounge.

Turning toward the river, and passing through a double door and an acoustical hallway, brings the visitor to the Dewey Library of Economics and Industrial

Relations. It is a long, high-ceilinged room with a mezzanine on the north or court side. The south or river side of the room contains eight large windows, each a living mural framed in long drapes decorated in traditional M.I.T. motifs. The drapes are separately hung on semicircular tracks; the east halves may be drawn in the morning, and the west in the afternoon. In effect, the room is divided into five bays by head-high shelving and three large exhibition panels, suspended from the ceiling, designed to hold permanent and changing exhibits of maps or other graphic material. The furniture is all of the familiar Hayden design—in rock maple with a few large, and many individual, tables placed in single and double rows. Four upholstered lounge chairs have been provided in each window bay. Quiet gray for metal stacks, neutral gray-brown for walls (with dramatic areas of dark blue, terra cotta, and green), and a plain red linoleum floor comprise the color scheme.

The Industrial Relations section is located at the extreme east end, in a room partitioned by shelving from the main area. Periodicals, reference material, card catalogues for Industrial Relations, and many pamphlets and monographs in vertical files are all used in this area. The first bay of the Dewey Library is largely devoted to reference material, indexes, encyclopedias, and reports. The economics collections generally follow in shelves near the exterior walls and on open stacks under the mezzanine. The card catalogue is located in the center of the room. Proceeding west, the periodical section, with bound and current journals in the field, is found on the left hand, while on the right are the large circulation desk and a small closed section of stack. On the mezzanine, back of the circulation desk, may be found additional bound and unbound files of periodicals in open stacks, and a number of shielded study tables.

On the ground floor facing the courtyard are a series of eight offices and workrooms which house the personnel for the Economics and Industrial Relations Library, the Technology Press, the Dard Hunter Paper Museum, and a statistical workroom. There are eight corresponding areas on the mezzanine directly above, which are intended for special collections, possibly including rare books. In the interim before permanent occupancy, they may be made available for short-term use by Faculty or visiting scholars.

At the extreme west end of Dewey Library is the splendid Map Room equipped and embellished by the Boston Stein Club to contain the central Institute collection of some 30,000 maps. Special consideration was given to the selection of each item of furniture and equipment. The Map Room contains a large consultation table (measuring 9 × 20 feet), a light table, an atlas case, special map storage units, and other facilities. Furnishings, rug, and color scheme have been designed to provide ideal facilities for the consultation and use of maps. A particular feature is the Great Globe, gift of Harry H. Young, '91, built to his order in England by Messrs. George Philip and Son, Ltd. The Great Globe measures six feet in diameter and is fitted to rotate on its axis in two and one half minutes. It is not intended to be, or to become, a sterile exhibit but is regarded as an active and valuable aid in the teaching program of the Institute.

The entire west wing of the library is occupied by the gallery, and a passage fronting the inner courtyard which connects the English and History, and Dewey libraries. The gallery proper has two walls of glass — one of which forms the wall of the outside building near the main entrance. Thus students and visitors alike are afforded a clear view of the contents whether the gallery is open or closed. The gallery meets the long felt need for an adequate secure space where the most valuable paintings, art objects, and exhibitions can be displayed advantageously. It is hoped that some of the seldom seen works of art in the Boston area can be shown here. The first exhibition was a collection of the work of Voorhees, Walker, Foley and Smith, architects of the building; it was followed by a unique showing of relatively recent works of Georges Braque.

Physically, the gallery has a floor area of about 2,400 square feet and has high ceilings. Two walls are glass and two are wood-faced and covered with linen to serve as mounting surfaces. From the Cardiff green terrazzo floor to the soft neutral gray walls, every effort has been made to direct attention away from the surroundings toward the contents of the gallery. Exhibition panels on pylons of natural birchwood are used. Cases are available, when needed, and although none have been provided inside the gallery, two are mounted just outside on the corridor walls. Floor-type glass cases will also be used in the corridor for small or special exhibits. A stairway near the central entrance to the new gallery provides access to the Dard Hunter Paper Museum which occupies approximately the same area directly below the gallery.

The Dard Hunter Paper Museum, acquired by the Institute some 11 years ago, is definitive in the technology of handmade paper. Exhibits and more extensive study collections, and a reference library, considered to be one of the best in the world on the subject, amplify the resources for the study of paper-making. In the Hunter Museum there are exhibition cases containing samples of paper, techniques of printing and bookmaking, watermarks, and related material. All of the facilities exist for the production of a book from the raw materials, and an exhibit shows the actual production of a book by hand, from the raw materials to the completed bound volume. Printing presses of various types are on display.

Directly above the Dewey Library on the second floor of the south wing is the new Central Library, the nerve center of the M.I.T. library system and the main source of Institute reference.

The Central Library, though a trifle larger, is essentially similar in shape to the Dewey; it is supplied with a mezzanine on the north or court side, and a smaller part mezzanine at the extreme east end but is not equipped with map-mounting boards. The sweep of the long room is unbroken save by furniture and low shelving in several areas. The superb view through the eight large windows — across the Charles to the full arc of the Boston skyline . . . from the gilded Capitol dome to Brookline — like the Dewey, is framed in full-length drapes. A color scheme of red floor, matching book shelves, gray periodical shelving with clear green and blue walls is refreshingly novel. The furniture of the now familiar Hayden pattern is



The Processing Room is the Central Library workroom. A glass-paneled corridor at the left looks into the Processing Room and also into the inner court.

ample and varied; individual small tables alternate with larger tables for several readers. Special bibliographic, card catalogue, and "stand up" tables (many tailored to the spaces they occupy) are used. A few pieces of lounge furniture are strategically located near the windows while individual study tables are located on the mezzanines.

As one enters the Central Library from the stair nearest the gallery the periodical section is located to the right. Here, segregated from the main room by special shelving, are large tables and a generous selection of general and specialized periodicals. To the left is the entrance to the main administrative office which faces the court. Just beyond is the main circulation desk with its statistical records, and facilities for charging and returning books. A passenger elevator and book lift, connecting with the main stack in the basement, and a workroom office are close to the circulation desk. Tables and work spaces for readers fill the space to the windows. Next, and almost in the center of the room, is the vast central Institute card catalogue which contains detailed information of the holdings of the central and all branch libraries. Beyond the catalogue are more tables for readers, including special reference sets. Alcoves with open reference shelves are to the left, and the main reference desk occupies the extreme east end under the mezzanine with the locked space above reserved for the thesis collection. The east end of the room contains

A portion of the English and History Library showing the circulation desk. Individual desks at the right look toward the Alumni Pool. The high windows in the alcoves at the extreme left face the inner court.



additional reference material and sets of scientific periodicals from 1930 to date. On the second floor tables are provided for the consultation of *Science Abstracts*, *Chemical Abstracts*, *Beilstein*, handbooks, and the like. The periodicals are continued on the small mezzanine just above, where eight individual tables serve for readers.

If the visitor will turn to the left at the reference desk, a passageway will lead directly to the north wing Faculty offices. Windows look down into the central court but the passageway also has a line of windows on the right, not only to increase interior lighting but also to permit those who pass by to look into the main library work area. Much goes on behind the scenes in a great library but usually the staff remain hidden from all but the most persistent investigator. Not so in Hayden. The processing room — a large low-ceilinged, well-lighted area — is occupied by the staff of cataloguers, catalogue typists, order, binding, documents, periodical, and accounting personnel. There is room, for the present at least, so that the flow of incoming books through to the shelves and the reader may be hastened. The processing room on the second floor is located immediately above the receiving room on the ground floor. The workroom where books are unpacked, checked, sent out or received from the bindery is directly below in the basement. A stairway and book lift connect all three floors. Near the entrance to the Central Library, a well-stocked bibliographical section is conveniently accessible to the library staff and user.

If undertaken for an appreciable period, serious research at a library table or open carrell is difficult at best. Most libraries, therefore, are besieged with requests for rooms or semiprivate areas that can be allocated for relatively short periods of time to particular projects. In the Hayden Library 15 individual study rooms have been included on the second floor mezzanine. Each is approximately 12×12 feet in size, with a large double north window; research projects undertaken by Faculty and staff may be housed for a period of weeks, or occasionally for months, in these desirable study rooms. They are not hideaways or second offices for busy members of the Faculty, and tenure is closely controlled.

The Institute has few rooms where colloquia, seminars, or staff gatherings may be conducted in a pleasant atmosphere of sociability, but for such uses the Moore Room, the Emerson Room, the Emma Rogers

The Library Lounge is admirably suited for use as a seminar room. Vernon D. Tate, Director of Libraries, is addressing a meeting of library personnel. It is also intended for use as a general social lounge.



Room in the main academic buildings are greatly prized amenities. To them may now be added the Library Lounge intended to serve identical functions, particularly (but not exclusively) for the humanities faculty. The Library Lounge on the third floor, directly above the library processing area, is intended for meetings of the Faculty, students, visitors, and the library staff. The Library Lounge with a kitchen for preparing light refreshments is a large, quietly decorated, and well-furnished room, and constitutes a greatly valued addition. In the northeast corner of the third floor, connected through the kitchen with the Library Lounge, is a small gaily furnished Women's Lounge reserved for the use of members of the library staff and of the offices in the north wing.

Even the library, the former citadel of the printed book, is not immune to the advances of technology. Microfilm, microprint, and microcards, reduced photographic facsimile, sheet film, and other methods of documentary reproduction now take their place with more conventional forms of the printed word as a part of the resources offered the library user. A section in the basement of the Hayden Library houses a laboratory for the production of microcopies and for the study of scientific aids to learning. Research and production go hand in hand. Inter-library loan can now make desired material available at a distance while the original volumes remain in the library at the service of the Technology community. Any material, however rare or complicated, can be collected or exchanged. Possibly in the future microfilming will be substituted for binding in the case of certain periodical files, as it now substitutes effectively for newspapers. The motion picture has long since invaded the elementary and secondary classroom. A recent survey shows that several hundred teaching and research films have been assembled at the Institute. To service these and other films that may be rented or borrowed from time to time, there is a small air-conditioned projection room, seating 50 and capable of providing theater-quality, 16-millimeter motion pictures with appropriate sound; it may be the prototype of the future classroom. These facilities are located in the great basement which extends under all of the wings of the building and the courtyard as well. They occupy but a small portion of the basement and the residue is devoted to library stacks. The Hayden collections must grow beyond 650,000 volumes before all stack space will be completely filled.

The Charles Hayden Memorial Library represents a long forward step by the Institute to meet increasingly stringent educational demands. The great new library with outstanding facilities for humanities, science, and technology required years of planning by the Administration, Staff, Faculty, Alumni, and outside advisers. It is the product of many hands and of many brains . . . a donor who gave far more than money — an architect, himself an alumnus, who was interested in creating more than a building — and an Administration prepared to carry the undertaking through to a successful conclusion. For the Alumni, present and future students, Faculty, Staff and others using M.I.T. library facilities, the Charles Hayden Memorial Library is an unparalleled resource.

SCIENTIFIC REBEL

—Study of a Pioneer Spirit

*May, 1950, Marks the Centennial of the Birth of
Edward Weston, Pioneer Electrical Instrument Maker*

BY DAVID O. WOODBURY

ONE hundred years ago this month, on May 9, 1850, in the tiny village of Oswestry in England, a child was born to an obscure mechanic named Edward Weston. From the beginning, the son, also called Edward, was a pioneer — a fighter and a dissenter from the accepted way of doing things. He had a towering impatience with convention; whatever he saw, he wanted to improve.

When the boy was eight years old, his mother, who was the driving force in the family, insisted upon moving into the factory town of Wolverhampton, so that Edward could get a real education. The father tagged along, taking what jobs he could get in the mills in a region where railroads and steel and textile mills accounted for the major industrial activity. But Edward instantly began to blossom. He was scarcely 12 when he was filling the house with electric batteries, bells, and even motors, in the conduct of his electrical and chemical experiments. He invented a machine for insulating wire which was so successful that he was able to build an induction coil that worked. He spent long hours at the town's mills, absorbing the "feel" of the machinery there.

Edward spent as little time as possible over his schooling, but passed his courses with credit because of his remarkable ability to originate new ideas. His teachers were fascinated by him; wisely, they condoned his spirit of rebellion against formal learning and took delight in helping him with his experiments. This spirit of rebellion stuck with him through life. In fact, it became the central driving force which produced all his achievements. That he became a great pioneer in electric power generation, in lighting, and especially in electrical measuring instruments, was no accident. From beginning to end he was at war with the loose, rule-of-thumb methods of the day. He made a devil of inefficiency and a god of perfection. Nothing was quite good enough for him. He believed that anything, whether it was the design of a machine, the writing of a patent, or the conduct of a lawsuit, could always be done better. He was instantly ready to take pains to achieve the high standards of his ideals.

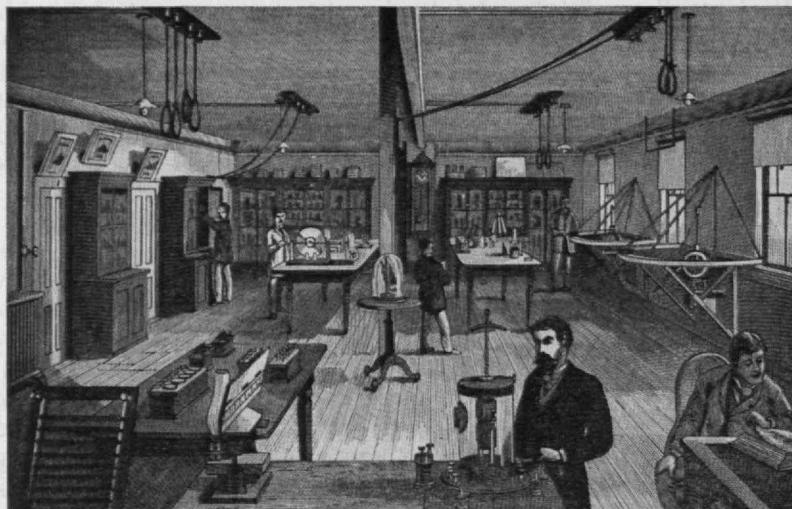
In the fierceness of youth, Edward Weston served a brief period of apprenticeship to a doctor. Abhorring the mere dispensing of pills, he became a little too experimental and avoided disaster only because the kindly old physician saved the patient's life by heroic measures. Weston gave up his medical apprenticeship, packed his bags, and calmly abandoned his family by going to London. It was his great desire to work under Michael Faraday, then rounding out his

wonderful career as the most beloved scientific figure in England. But Faraday died before the young man could meet him. Suddenly going off on a new tack, the rebel put up his last £10 for a passage to America. A chance acquaintance had told him that a job would be waiting for him at the Castle Garden dock in New York.

Conditions were not quite as represented in this country in 1870, and Weston got down to one \$0.10 meal a day before he found a miserable job mixing solutions in a small plant in which photographic plates were made. An inexcusable explosion in a collodion tray so enraged him that he determined to change his employment. But the only other job he could find open was the post of chief engineer and chemist to a well-known electroplating firm. Boldly, Edward answered the advertisement, and, to his amazement, the head of the company came around to see him.



Newark College of Engineering
Edward Weston — as the young, energetic inventor



Newark College of Engineering

The physical laboratory of Edward Weston contained instruments for the analysis and measurement of light and electrical quantities. The tangent galvanometers at the right measured electrical current.

Young Weston abhorred bluff, but in those days one hardly needed it. In every technical field people were groping. Particularly in electrochemistry ignorance of principles was abysmal. Old-style wet batteries were still used for supplying current; solutions were mixed until they were "about right." Platings of nickel and silver were uneven and promptly peeled off the base metal. Weston found out this much before his interviewer came to see him, and then calmly told him that he would make a very good chemical expert indeed. He even guaranteed to put the ailing plant back in production in a few weeks.

Early Successes in Electroplating

The man believed him, and Weston went to work at the princely salary of \$15 a week. He had not overstated his abilities. By working day and night, and applying his fairly comprehensive knowledge of chemistry, he was able to clean out the contaminated plating baths, rejuvenate the batteries, and get the plating schedule on its feet again. It took him less than a month, and it was arduous work. Equipment was worn out. The artisans were ignorant and opinionated. There was no textbook to tell him how to solve his problems. But the happy result was that Weston virtually reinvented electroplating, and put his finger on many of the fundamental weaknesses of the art, as well. The American Nickel Plating Company began to prosper. A shiny nickel coating on metallic objects was just then the rage. With smart salesmanship, the company began plating everything from ladies' brooches to fire-engine boilers. Edward Weston, at that time but 20 years old, had acquired a reputation in the field.

This success was not enough for Weston, who now decided to marry. As to how this was done there is no record. He seems to have treated courtship with the same truculent spirit that he used in chemical experiments. He met, courted, and married a young German girl, Wilhelmina Seidel, all within a month or two, then got back to electroplating, as if his excursion into human relations were finished. Mrs. Weston disap-

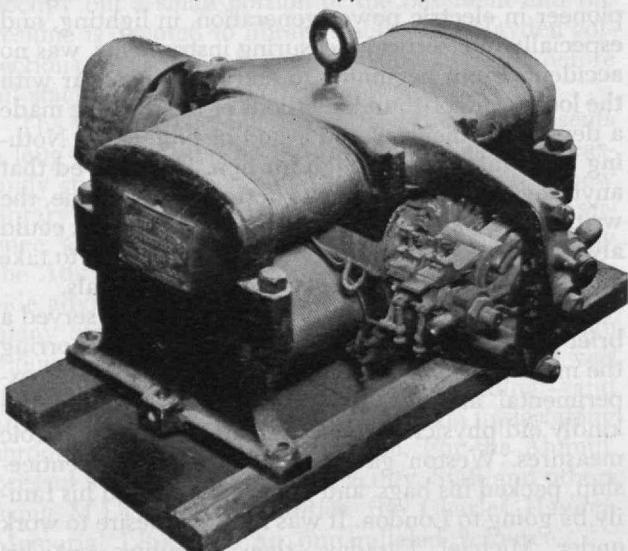
peared into a succession of homes, each more pretentious than the last. She took no part in Weston's professional life. She was a good wife and later a good mother to her two sons. That is absolutely all the record shows.

Her first home, however, a miserable pair of rooms in downtown New York, was far from pretentious. For, shortly after his marriage, Weston lost his job when the plating company closed its doors. Ironically, he had brought nickel plating into so much favor that the owners of the firm decided to corner the market in nickel, and let others do the work of depositing it. Unable to find work anywhere, he had bought a moribund photographer's business, and was living in a single room at the rear of a small studio.

He was a tolerably good photographer but the work bored him so that he neglected it. The business expired: a little over two years after he had arrived penniless in New York, he was penniless again, and without employment. Then, in the nick of time, he met George J. Harris, who had a little money to invest in a business enterprise. Weston persuaded him to establish a new electroplating firm which became known as Harris and Weston.

The new firm went into business guaranteeing that their nickel plate would not strip or peel, and fortune was with them. Presently, they owned a sizable factory on Center Street and employed a dozen men. When the terrible financial panic of 1873 swept the country, Harris and Weston managed to pull through. One thing that saved them was a small dynamo that Weston had designed and built, which took the place of batteries. Another was his first patent, covering a new kind of nickel anode material, made of powdered metal, carbon, and binder. It produced a beautifully

An early type of electroplating dynamo made by Weston has been in the possession of M.I.T. for more than 60 years. Both field and armature are made of solid cast iron; the brushes are of laminated copper strips.



M.I.T. Photo

smooth, tenacious plating that would take a mirror polish. It put the firm head and shoulders above its competitors in quality and rapidity of work.

The business would probably have thrived indefinitely, but Weston already chafed under its routine restrictions. His whole mind was occupied with developing the plating dynamo, and forcing the industry to adopt it. Harris was no technician, and the business languished.

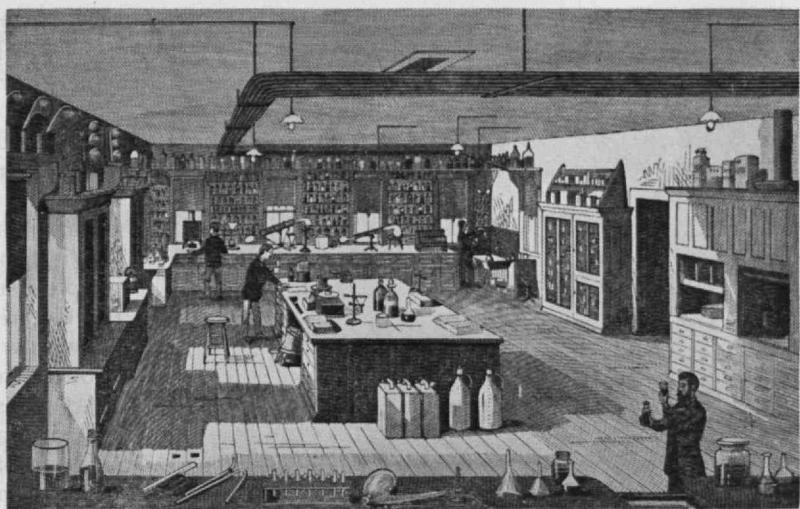
In the midst of a world of bright young men like Edison, Bell, and Elihu Thomson, Weston's reputation was nevertheless growing rapidly. His dynamo came to the attention of Stevens, Roberts and Havell, a Newark manufacturer of novelties — and the company bought a machine. Then, in 1875, they gave him legal aid in fighting his first infringement suit, and at the same time agreed to manufacture the nickel anode which was the basis of the suit. Five years out from Castle Garden, Weston had become a force in the budding electrical industry.

The Weston dynamo was a crude affair, not much different from half a dozen others, all of which were descendants of the prototype invented by Gramme in Europe. But, from the first, the young Englishman showed a genius for reducing designs to essentials. His machine was compact and reasonably efficient. It did the plating job admirably.

The great Philadelphia Centennial of 1876 was a bitter disappointment to Edward Weston, for the dynamo he showed was ignored. But a few months later the slight was forgotten. The Stevens firm entered into a contract with him to make the plating machine, and took Weston on as engineer and manager of the new dynamo factory. He responded by plunging with tremendous vigor into new designs. In the next couple of years he took out at least a dozen patents on dynamos and motors, anticipating, among other things, the forced air-cooling of rotating parts and the elimination of eddy current losses by the use of laminated steel in the magnetic circuit.

The company had given him a fine machine shop for his experiments and hoped that he would forge ahead with them in the plating industry. But the horizon was not large enough, and he struck off into new territory again; this time turning his attention to electric lighting with arc lamps. Charles F. Brush, Elihu Thomson, James Wood, Hiram S. Maxim, and many more were in the field already, but Weston moved into it so fast that he was soon abreast of them all. He found that a relatively high-voltage dynamo would work, if carefully designed and controlled, and that carbon arcs could be made moderately reliable with ingeniously designed feed mechanisms. He insisted on setting up the manufacture of this equipment.

If the firm of Stevens, Roberts and Havell had not had its feet well on the ground, the plating patents might have died for lack of attention. As it was, Weston aroused the ire of numerous customers, among



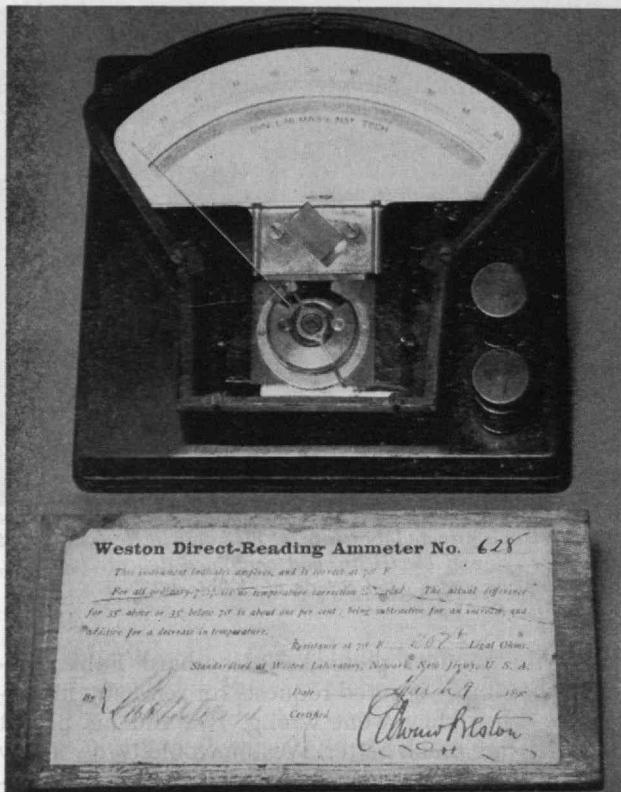
Newark College of Engineering
The chemical room in Weston's private laboratory, at his home in Newark, about 1885, provided outlets for gas and electricity, and contained delicate balances, testing devices, and a good supply of chemicals.

them the pioneer penmaker, Eberhard Faber, because he simply ignored requests for servicing his dynamos when they went wrong. Nor did his patent attorney fare much better. Weston would throw a new idea at him — or a dozen of them — then become inaccessible in his shop. The attorney would hound him for weeks, then finally go ahead alone and make drawings, file claims, and even find manufacturers for the new products.

Contributions to Electric Illumination

The opening period of arc lighting, during the decade spanning the 1870's and the 1880's, was among the most fantastic in American business history. Spearheaded by Charles F. Brush, a dozen or more inventors stormed the country in person, selling isolated lighting systems to cities and towns everywhere, even conducting small private wars with one another over the rights to a given territory. When they were not running each other out of town, they were in court vociferously bringing infringement suits. It was just the atmosphere Weston loved, especially the suits. He had a remarkable talent for winning legal arguments, and soon came to be dreaded by all his competitors. In the following years a host of interests met him at the bar and lost — all but Edison, whose incandescent lamp patents proved to be invincible.

Weston's contributions to arc lighting were not revolutionary, but they were sound, and his dynamo was, on the whole, better designed than any of the others. In 1879 his benefactors helped him organize the Weston Electric Light Company, and he became a leading figure in the largest field of applied electricity. Soon Weston had obtained the contract for lighting the vast new Brooklyn Bridge. He had established public utilities in cities all over the East; his lamps were in hotels, stores, amusement parks, and on piers and in theaters. A major infringement suit against Brush, over the method of compounding arc lamp carbons, was decided in his favor. He became principal competitor of Thomas A. Edison for a while when the results of his work on lighting suddenly brought him into Edison's own preserve — incandescent lighting.



M.I.T. Photo

This early electrical measuring instrument, with knife-edge pointer and mirror, differs from most Model 1 instruments in having a plastic cover plate which was later replaced by metal and glass. During its 60 years of service, this instrument has never been returned to the factory for repairs or servicing of any kind.

To cover in any detail the enormous variety of Weston's contributions to this field would make a long story, and one that is already recorded in book form.^o It is enough here to say that his protesting mind cut through the difficulties and limitations of the glowing filament and produced several basic improvements, soon adopted throughout the industry. One was the amorphous carbon thread, made by compacting carbon powder and sintering it into a homogeneous, non-fibrous filament. This he called "tamidine." It led the field and eventually drove out Edison's original carbonized reed.

His second important advance was the "flashing" process for obtaining a uniform diameter of filament and eliminating the weak points that caused burn-outs. It consisted of burning the new filament in a hydrocarbon atmosphere, by which pure carbon was deposited on the thin places which glowed more brightly than the rest. By this process, lamp life was raised to thousands of hours.

A third contribution was the thorium oxide "getter" for absorbing the last traces of oxygen after the lamp bulb had been exhausted. This principle is still used in the manufacture of some types of radio tubes.

By 1886 Edward Weston was a major figure in electrical engineering. His Weston Electric Light Company had been absorbed by the United States Electric Lighting Company and big money was behind it. His prominence was daily attested by patent suits, which cropped up on every hand. He sailed into them

^o David O. Woodbury, *A Measure for Greatness* (New York: McGraw-Hill Book Company, 1949), \$4.00.

with savage delight and beat his enemies almost every time. He had received 186 patents, the majority of which were unassailable. He was rapidly becoming a rich man.

Then, suddenly, he quarreled with his business associates and resigned. He was once more the lone eagle. But there was no more walking the streets. The income from royalties was large and secure, and he was in constant demand as an expert witness in other people's suits. He was an outstanding authority on the electrical art in its practical aspects. Better, he knew how to explain to judges and lawyers even the knottiest technical concepts. He was able to force a court decision on the merits of a patent, not on legal verbiage and indirection. A number of firms were ready to offer him \$5,000 yearly retainers just in case they got into trouble. A few such commissions would have made him wealthy for life.

But again Weston was not satisfied. He had by no means exhausted the great well of his ideas, and as soon as he was his own master he built himself a magnificent laboratory in the back yard of his home, and put a staff of people to work on various new scientific problems.

Precision in Electrical Measurements

The question of what to invent next never bothered Weston. As Professor Emeritus Dugald C. Jackson,^f of the M.I.T. Department of Electrical Engineering, once said: "Dissatisfaction, not necessity, was the mother of Weston's inventions." And this rebel was perpetually dissatisfied with something. In 1886, he was annoyed at the complete lack of suitable electrical measuring instruments. Although the electric lighting art was nearly 15 years old, there was no convenient or accurate way to determine voltages and currents, and it was actually believed that there never would be one. D'Arsonval in France, and a few others scattered over the world, had made attempts to apply the old galvanometer principle to the large demands of electric power measurement. But they had succeeded poorly. Edison, with systems spanning the country, was still "weighing the electric light bill" every month by means of an electrochemical meter on each customer's premises.

Weston's success had always stemmed from the fact that he recognized a need just a few weeks or months before his competitors did, and hence produced the pioneer solutions to the new problems. He did this with signal success in the instrument field. The demand for good instruments was acute. He determined to build a portable voltmeter that would be dependable and accurate.

He began just where D'Arsonval had, with a tiny coil of wire suspended and free to turn between the poles of a horseshoe magnet. The voltage to be measured was applied across the coil and produced a current in the coil. This current, in turn, produced a magnetic field which combined with that of the horseshoe magnet in such a way as to turn the coil by an amount which depended on the voltage. Immediately he made discoveries which gave him an undisputed

(Continued on page 404)

^f Woodbury, opus cited, page 158.

American Education in a Quandary-II

*Originating in the Universities and Reaching into the Community
Cross-Fertilization of Ideas Holds Greatest Promise for
Providing an Adequate Basis for the Good Life*

BY C. C. FURNAS

IN some quarters it is popular at the moment to expound on a line of pessimism which says that another world war is inevitable and that because of the effectiveness of modern weapons it will be completely destructive and will wipe out the human race, or at least civilization, and so what is the use anyway?

The Possibility of War. Though the lethality of modern weapons and those that are in development can hardly be overemphasized, there is no justification for taking that gloomy a view. Another full-fledged world war would, without doubt, be truly catastrophic. Possible physical destruction would completely overshadow that of World War II. Undoubtedly millions would lose their lives, human relations would degenerate, suffering might well exceed any that we have ever known. Civilization would receive a very serious setback, but it would not be destroyed. Time and again it has been demonstrated that human society is made of very tough material and that it does not destroy easily.

Let it not be thought that I am unaware of the extreme seriousness of another world war. When civilization does become fairly reasonable and reasonably peaceful, such conflicts will have become unthinkable and unspeakable. The major task of the world today is to avoid such a war if at all possible. Let no one underrate its potential seriousness but also let him not be so pessimistic as to assume that there is no hope and no future for the world.

Often it appears that because of our perpetual conflicts, individual and group loyalties will always call for the battle of man against man and group against group. We seem never to be really unified until we are in danger, and battling in a common cause. A real "moral equivalent of war" apparently has never been found. At times it appears that the only way to avoid conflict between us and the Russian nation would be to have an invasion of men from Mars so that we would band together against the common enemy. Admitting that competition by individuals and groups is probably the heart of our existence and advancement, no one has really explained why, even when engendered by a sense of insecurity and by pride and prejudices, the competitive aspect repeatedly gets out of hand to the extent of destructive combat between nations. From the point of view of common sense, it is utterly silly, but there it is, and is not readily explained away. It is of course trite to say that this is a major social problem of our generation, but it will still bear repeating. Any possibility of solution should be grasped

and examined to the full. At this point, recommendation for reading of a very recent book *Modern Arms and Free Men*¹ by Vannevar Bush, '16, would appear to be in order. It is an excellent combination of realism and optimism.

Framework of a Solution

At this point you may well accuse me of having taken liberties which are not allowable. My subject mentions education and I've persisted in speaking of wars and babies, minerals, airplanes and food. However, there is a reason for that approach. This business of two billion plus individuals living together on one confining cosmic clod is an experiment — a problem in research. Quite a few years of teaching coupled with considerable research experience, and looking over the shoulders of many others, have shown me that when a research problem is well analyzed, it is halfway on the path toward a solution. Hence my observations on the pattern of the world in which we live. Education must start with that to be realistic.

I am not going to be so presumptuous as to indicate that I know any exact or even valid answers to the problems of modern education. Civilization is, as it has always been, a bootstrap-pulling proposition. Thousands have searched for the answers to all our problems and no one has found them. That situation is not going to be changed readily, and certainly not by this article. But there are a few elements which appear to be necessary parts of the structure of our future. A consideration of them might bring out some constructive ideas.

The Socialized State. The present popular appeal of the idea of the "Welfare State" in this country is, I believe, generally recognized to be but another step towards the completely socialized state. The socialized state, whether under the name of communism or any other is, of course, by no means new in history. Communistic societies were the rule rather than the exception among primitive people. Among small homogeneous groups in a simple economy it was probably not only a workable but perhaps the best arrangement. Without going into any of the many possible points of argument, it is quite apparent that the truly socialized state is completely unworkable for modern society. The basic reason is that socialism, to be really workable, must be so complete that individuality is thoroughly suppressed. If any individual hap-

¹ New York: Simon and Schuster, 1949. \$3.50.

pens to step out of line with the rules and mores of the socialistic state, he must be brought back into line, or eliminated, or the whole delicately balanced structure will start to collapse. The present Russian nation should be enough of an example of the end results to be completely convincing. Complete socialism, if carried to its logical conclusions, means that we must fall into the ant-hill existence. It is conceivable that the ant life would be simpler but, in my opinion, it could hardly be worth while, and certainly would not be very much fun.

The Role of Democracy. I am quite convinced, not only for emotional reasons but because the arguments appear very sound, that any real solutions will ultimately be found in continuation along the paths of democracy. Democracy is a term which is much bandied about and also much maltreated, so it first needs to be defined. The democracy which I am speaking of is that which was most aptly and most completely defined by Abraham Lincoln as the "government of the people, by the people, for the people." This definition, by statement and by implication, embraces a quite ample delineation of the essentials of democracy for all time to come. Because of the presumed temporary effectiveness of dictators, there are those who believe that, as life becomes more complicated, democracy becomes less effective and that totalitarianism, with the big boss on top, is the only way that we will arrive at a stable civilization. It would appear that history would give sufficient examples to show that dictatorships or a totalitarian state of any sort are not only cruel but ineffective and often short-lived. However, the appeal of the effectiveness of an efficient industrial management is so strong that it is often carried over, by analogy, as the ideal for the political unit of the state or the nation. It is my opinion, however, that the very complexity of our modern affairs is the thing which makes it necessary that the government shall be of, by, and for the people. Since the world does not have and never did have individual supermen who were so all-wise or of such infinite ability that they could individually handle all affairs of civilization, it becomes necessary that effective and true collaboration and integration of the efforts of the people are required. People being the way they are, you only arrive at this type of collaboration if the government truly reflects and represents them, their needs, and their wishes. No matter how angry and disgusted I become at times at the trends and the vicissitudes of political democracy, it is still my firm conviction that it is not only the soundest but the only route along which civilization can advance. The democratic pattern which is ultimately evolved may have many phases and aspects which would seem strange to us, but still the elements of "of, by, and for the people" must, and undoubtedly will be there. Further, if we are to have a world which will remain at peace, world-wide collaboration (and hence world-wide democracy) is an absolute essential. That, of course, is a basic bone of contention between us and the Russian state at the present time. Whether the necessary world-wide conversion can be made to come about through acts of persuasion and demonstration and example, rather than by war, only history will be able to tell.

The Time Element. By the time we emerge from early childhood, the pattern of our thoughts and our emotions is fairly well fixed. We continue gaining new knowledge for years to come but the genes and our environment have left their permanent mark by this time, so our individual and group responses, particularly in the field of emotion, are quite predictable and, on the average, change but little. Hence, we can only really perform about one good sociological experiment per generation. We have only been attempting this business of living together for a few hundred generations, so we have only been able to perform a few hundred experiments. Considering the complexity of the task, it seems to me that we have done very well indeed. Many a relatively simple problem in physics or chemistry takes many times a few hundred experiments to arrive at a successful solution. Therefore, if we could look at ourselves objectively, we would probably conclude that, everything considered, we are not doing too badly. Naturally, we would like to see the experiment completely successful in our own generation. That is a worthy emotional reaction but not a true measure of the success or failure of the work.

In the older days, before science really began to make itself effective in the world, physical changes in the pattern of living came very slowly and the need for rapid social change was correspondingly small. Life in medieval Europe was probably very dull, but life did move on its slow and tranquil way, and there was always ample time for another generation to come along and adapt itself as necessary.

At present, however, important changes in the framework of living occur not by the generation but they come by the year and sometimes, it seems, almost by the hour. The present inhabitants, an ensemble of two billion people, are continually thrown into a state of emotional, political, and economic indigestion. It is not change itself that makes the problem difficult, it is the rate of change. Our capacity for adaptability, unfortunately, is not great enough to handle the situation. Although the classicists believe that the ancient Greeks were a superior race, the like of which has never been seen before or since, it is my opinion that we have not lost ground intellectually or emotionally since those hallowed days. We have essentially the same capabilities — are about the same breed of animals. Our fund of information is infinitely larger than it has ever been before and, in view of the circumstances, our decisions and actions are probably about as intelligent as we have a right to expect. Our most severe sociological difficulty is that the problems of the job we have thrust upon ourselves, by the rapid transformation of the physical world, are such that any one generation, with its present mental cast, cannot solve them as rapidly as they come. Our performance may appear to be poor but it is no cause for real despair. The new generation has nearly always surprised the older one with its ability to get on in the world and if this happens often enough things may not turn out so badly after all.

Elements of Solution

Most persons who worry about the state of American education, and they are many, beat the drum

for some specific reform as if education were a single-valued function that could be solved by a single successful operation. As a matter of fact, education is as complicated as life itself for the simple reason that it is an integral and essential part of life. There is no one element that is predominantly bad — though admittedly the ensemble needs thorough investigation and repair — perhaps rebuilding. Like the system of endocrine organs in the human body, education depends on the proper balance in the functions of many parts. Remedies of endocrine malfunctioning are seldom achieved by making up a single deficiency or restricting a single overzealous gland. Or perhaps you prefer the analogy of a television set that is out of balance. You seldom bring it back to normal and effective performance by adjusting a single knob; it seems you have to twiddle at least six of them.

Without implying that I know how to adjust the glands or tinker with the knobs of civilization, I would like to describe some seven items that I consider of paramount importance in the matrix of education and suggest that if improvements are possible they will only come about by balanced modifications and operations in these areas.

Time. America is dedicated to the policy of universal education, which is admittedly essential for a democratic society. There has been a tendency to adopt the purely quantitative approach — expose the victim to the educational system long enough and he will, at the limit of his absorptive capacity, become saturated with the proper knowledge and understanding of the world and all will be sweetness and light. There are those who would extend the period even further than it is now. But life is short and the hours are fleeting. Even the normal college education takes a man to about the time of the peak of his physical prowess, and he is prepared to begin living only when he has begun to slide downhill as a biological organism. For the professional man the situation is worse. A physician can hardly hope to begin his life's work before age 30 and he already begins to feel old even though the calendar says he has a few more years. Undoubtedly there are areas where the time devoted to education could well be extended, but real advance will come only when the teaching fraternity shifts major attention to the effectiveness of the educational processes, rather than insisting on increasing the time of exposure to formal classroom environment. If there is any point in trying to improve education, we should assume that we are not going to have any more time available and resolve to make better use of that we do have.

Be it said as a corollary to this attitude that far more can probably eventually be done in adult education than is true at present. Formal classes for adults, university round tables, professional short courses, and several other devices all contribute to progress in this field, but when all such efforts are added together they still give a vague effect of playing house. Educational systems, from elementary schools through universities, could undoubtedly wield much greater power in filling and molding the minds of postschool adults in their particular regions if they undertook the matter as a task of paramount importance. There



should be no time limit placed on this sort of activity.

Financial Support. Unanimous and unqualified agreement can be obtained among any group of educators on the proposition that educational institutions need and deserve more financial support. I agree wholeheartedly and believe that a triple star should be placed on the needs of private institutions of higher learning. But I do not plan to dwell on this point because it does not, in itself, point the way to the resolving of the quandary which I have taken as my theme. Research men, engineers, churchmen, generals and admirals, politicians, farmers, and bureaucrats always clamor for more money — never for themselves; always so they can progress further in their important and worthy work. I confess to complete guilt on the charge myself. But I also recognize that finances alone do not solve problems that are rooted in something other than money.

Understanding of Principles. Since I have now discarded the first two of my seven items as not being of major import in solving the quandary, I must obviously begin making good use of the remaining five. Coming closer in to the kernel of the argument, it seems appropriate to scrutinize the item which I will call the "Understanding of Principles." I will admit here to leaning heavily on the role of the sciences, but I trust not unduly so.

Though I was engaged for a number of years in teaching endeavors myself, I never arrived at any firm conclusions as to the best or even a good way of leading the new generation to acquiring knowledge and understanding. I have found, however, that the first requisite of even moderate success in the field is to have the objective quite clearly defined in the minds

of both the teacher and the pupil. In the teaching of science, before it arrives at the truly professional level, it seems to me that the acquisition of bits of knowledge about the physical world and what makes it tick, should merely be a secondary objective. In the field of general education, particularly, it would appear that the prime objective of the teaching of physical sciences should be to inculcate a real understanding of the physical world as contrasted to the mere acquisition of facts. This understanding, as I perceive it, would be that the world is put together and operates on certain unalterable principles which we call natural laws and that for every cause there is an effect, and vice versa. The objective of research and the subsequent teachings is to determine these relations between cause and effect and to realize that these things are true and unchanging. If the mass public can come to really believe that, a great deal of the mumbo jumbo of the modern world will automatically be removed.

Extending this basic understanding of cause and effect to the social world, the educated public would begin to realize and comprehend that human beings themselves, individually and en masse, operate in a cause-and-effect framework, just as do clocks and levers, radios and airplanes. Our knowledge of cause and effect in dealing with people, whether in religion, economics or politics, is certainly meager. It is all inexorably wrapped with an emotional pattern, but mere complexities do not change the fact that there is some reason for everything that happens, even with people. Determining reasons is the first step towards achieving a remedy. Far too much effort is spent in exhorting people and telling them how they ought to be, rather than in finding out how they really are. It is my own opinion that a continuing, thorough, and valid teaching of science in the schoolroom now will inevitably lead to a much more objective attitude on the part of people toward themselves and toward each other in the future. From this should come a basis of understanding, perhaps even a little sympathy, and slowly the solution of basic social problems might begin to take shape.

Let it not be thought that emphasis on basic understanding removes the necessity for learning facts. The once-over-lightly treatment with a casual indifference to the body of facts leads to dilettantism, and the dilettante in action is at the best, useless, and at the worst, dangerous.

Though I contend that a reasonable concept and understanding of that entity we call science should be a part of every person's education, I do not wish to be guilty of overemphasizing it. It should be pointed out that a historian could change only a few words in the argument I have presented immediately above and come out with the same statements on the "thread of history" that I have made on the understanding of cause and effect. Or you can modify it to expound on the elements of logic, or the theme of a great literary composition, or the principles of harmony. The particular grooves in which we as specialists all tend to travel are actually not isolated; they are not really far apart. The walls between them are rather thin and there are many doors. Some cross-visitations can hardly avoid being beneficial.

As a corollary of the task of inducing understanding it would be very valuable, in the educational processes, to focus considerable attention on what we do not know. Such a statement might appear absurd, for how can we know what we do not know? However, maps of Antarctica give fairly precise delineation of the limits of the land mass and designate various areas on the interior as "unknown" or "unexplored." The situation is certainly analogous to the physical and biological sciences. The fringes of knowledge are known with reasonable certainty; it is the interior that is known to be unknown. To only a somewhat less degree is this the case for history and many of the other branches of knowledge. For motivation and orientation, it would appear that it would be fruitful to spend considerable educational effort in delineating the unknown areas along with the inculcation of facts and principles of which we are reasonably sure. I know of no courses of study that put any emphasis on the unknown. I suggest it be tried.

Values. In the interest of conciseness it is probably well to approach the subject of "Values" with quotations from David McCord Wright's *Democracy and Progress*:²

Progress . . . entails that we do something from which the "scientific" point of view has been assiduously running away for the past century; namely that we search for and proclaim values. The case for democratic and competitive development depends upon the answer to two questions: (1) Is there a group or class capable of developing and initiating good standards? (2) Will it be, has it been listened to?

Democratic progress comes through the existence and effect of an active and influential "censor" class. By this I do not mean direct control but criticism.

Democratic control must be largely self-control. And even the greatest social achievements, if accompanied by a nibbling away of the structure which makes for self-control and responsibility in the individual, cannot prevent an eventual collapse of democratic society. It is plain that the system also involves, of its very nature, multiple short-run functional inefficiencies.

It has been a habit, for centuries, to look to the body of religion for a set of values. Even though the necessity of some value standards was recognized, it was not thought of as a function of education or democracy. But religious values arose from and were imposed by a substantial element of fear, implemented by considerable amounts of mysticism and suggestions of the supernatural. Largely because of the impact of science, those psychological forces which were formerly the source of religious strength are only partially effective now. Relatively few people believe in a literal hell and they are moderately skeptical of the supernatural. At the risk of being misconstrued, I would suggest that the responsibility of propounding values, formerly assumed entirely by religion, must now, to a large degree, be shouldered by democracy and its handmaiden, education. Assuming that this attitude is the correct one, how can any individual or any group — no matter how intellectually honest — propound a set of valuable values? Further, how can they get them accepted? It is a bootstrap-pulling

² New York: The Macmillan Company, 1948. \$3.50.

proposition, par excellence. This is a really sporting challenge to democracy, which will probably rise or fall on its effectiveness in facing the task. No easy solution is in sight but considerable encouragement can be obtained from a review of democracy's past achievements. The Magna Charta, the Declaration of Independence, the Constitution of the United States, were essentially documents which devoted themselves to the exposition of human values. You may contend that these were merely political documents and hence not sufficient for individuals, but none can deny their virtues within their limited scope. They have withstood international wars, revolutions, rebellions, and time. Moreover, by and large, the bulk of the people in other Western democratic countries still believe in the tenets of those documents. It is not entirely a matter of chance that democracy rises to the occasion when it really has to. One does not have to be unduly sanguine to assume that it will continue to do so. Its progress in setting up still further valid values through the medium of education will be necessarily slow and fumbling, but there is a reasonable probability, that by building on its past experience it will come out with some common-sense solutions.

Even the most exact of all scientists, the mathematician, sometimes resorts to a similar inexact type of approach. Often there are several solutions to an abstract problem. With a particular objective in mind the mathematician recognizes one possible solution as absurd, the other as "common sense." He chooses the latter, and discards the absurd. He arrives at this type of judgment only because he has had experience in achieving certain objectives — values, if you choose. Educational leaders, by some self-assumption of responsibility and implementation of their best thoughts, can be of immeasurable service in enabling educators to choose the common-sense solutions in their selection of standards of value. I believe it can be done without being dictatorial, unduly sanctimonious or overly pious.

Research on the Learning Process. The Twentieth Century has witnessed a great upsurge in so-called research in education, particularly for the elementary and secondary levels. I have, in the past, participated on the fringes of some of these activities and have from time to time attempted to make a personal evaluation of the results and I have found them very disappointing, particularly in the region of so-called "progressive" education. The most obvious result has been an upsurge of unimaginative demand on the part of teachers for pat formulas, handbooks, and detailed study outlines. In some areas and fields of learning there has undoubtedly been some improvement, but in most instances progress has been nil, and in others there has been a real retrogression. When you match this with requirements, you are justified in feeling rather gloomy because the job to be done becomes ever more difficult: there are more things to be taught and more people coming into the pattern who have, at the best, only modest mental capacity. Probably the most outstanding progress has been made in special schools which have been set aside for educating the mentally deficient up to the limit of their capabilities. That may be desirable, but success in that quarter is



M.I.T. Photo

not going to be any great aid to civilization along its rocky road.

My gloomy condemnation of the results of educational research to date are not intended to be cynical. Many problems in inanimate science have remained hopelessly bogged down until a certain minimum degree of sophistication had been achieved; then the solutions became clear and easy. The contributions of Galileo, Copernicus, Newton, and Kepler to astronomy might be cited as a case in point. When a really basic understanding of the phenomena involved was at hand, a solution of the complete system was readily forthcoming.

Only recently has science begun to achieve a basic understanding of the operation of systems in which there are many variables, many choices, and many alternate solutions. Work in this area was immensely stimulated by the grim necessities of World War II, and many applicable tools of mathematics and logic were developed. In military circles this usually comes under the heading of operational research. The most outstanding example of its effectiveness was the performance of the Royal Air Force in the defense of Britain, when "Never in history did so many owe so much to so few." The operational-research problem here was to determine the optimum pattern of action with a limited-range radar detecting system and an inadequate number of fighter aircraft. The system embraced inanimate factors such as radar equipment, aircraft, bombs, machine guns, and weather. It also involved the characteristics and unpredictabilities of two unique sets of humans: the British and the German airmen. The optimum operation for the British was worked out, not by glamorous dogfights between pilots in the air, but by grubby mathematicians and physicists who stayed on the ground, the solutions being implemented by the detecting radar network. The history of 1940 is quite ample as evidence of, and a monument to, their success.

It should be noted that this, and all other pieces of operational research, do not involve a single solution

(Continued on page 394)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

In Charge of Finances

EFFECTIVE July 1, Joseph J. Snyder, 2-44, will take over new duties as treasurer of the Institute upon the retirement of Horace S. Ford. Mr. Ford has been the principal financial officer of the Institute for the past 36 years, and its treasurer and a member of the M.I.T. Corporation since 1934. Mr. Ford will continue to be active in Institute affairs as consultant to President Killian on investments, real estate, taxes, and municipal relations.

In his capacity as assistant treasurer, Mr. Snyder has been active in the financial and business affairs of M.I.T. since 1946. As a member of the Steering Committee and as Secretary of the Committee on Business Corporations of the Development Program, he has been prominent in the negotiations for the support of education and research at the Institute by industrial companies.

The new treasurer has wide experience in investment management, financial administration, and industrial management. He is a partner in the Colonial Management Associates of Boston, investment advisers to the Finance Committee of the Massachusetts General Hospital and other organizations. He is also vice-president of the Railway and Light Securities Company and the Gas Industries Fund which are investment trusts. He is a member of the corporation of the Suffolk Savings Bank for Seamen and Others. In

the manufacturing field, he has served as chairman of the Board of Directors of the Michigan Seamless Tube Company.

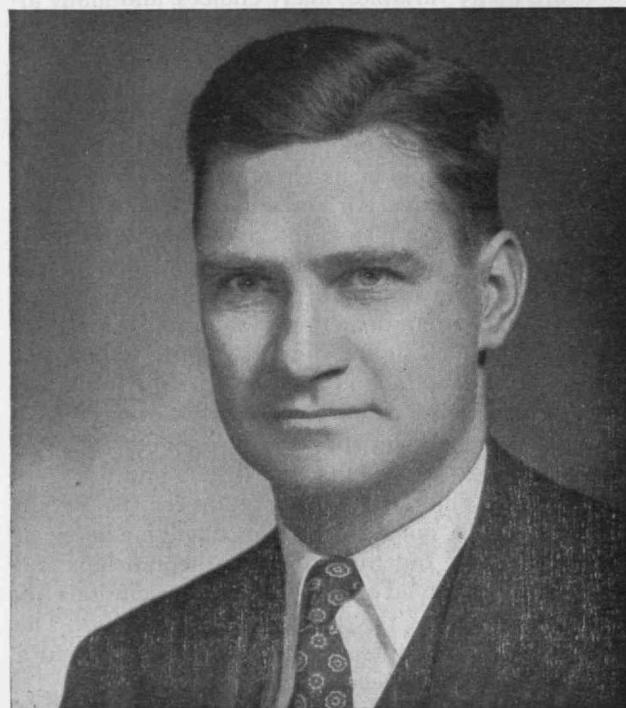
Mr. Snyder is the son of Mr. and Mrs. Paul J. Snyder of Findlay, Ohio, where he was born in 1907. He was graduated from the Carnegie Institute of Technology with the degree of bachelor of science in 1931, and from the Graduate School of Business Administration, Harvard University, with the degree of master of business administration in 1934. From 1943 to 1944 he carried on special graduate studies at M.I.T. From 1944 to 1945 he was secretary of the budget committee and associate head of the Office of Business Administration of the Radiation Laboratory at the Institute. He has been awarded the Army-Navy Certificate of Appreciation and is an associate member of the American Institute of Chemical Engineers.

Alumni Day, 1950

SEVERAL innovations will be made in Alumni-Day activities this year. Of considerable interest to the five-year classes which will be holding reunions is the fact that Alumni Day comes on Monday, June 12, thus enabling reunion classes to schedule their gatherings for the week end of June 9. Of significance to all Alumni will be the departmental reunions and forums in which the Departments of Aeronautical Engineering, Biology, Business and Engineering Administration, Chemical Engineering, Chemistry, Civil and Sanitary Engineering, Electrical Engineering, and Mechanical Engineering will provide opportunity to examine the most recent activities in their Departments, while also affording focus for surveying trends in these professional fields. The informal discussions, colloquia, motion pictures, and symposia which these various Departments offer (from 10:30 A.M. until noontime) will provide excellent opportunity for course reunions.

At noon, the usual luncheon will be held in Du Pont Court if the weather is pleasant; otherwise, in the Rockwell Cage.

In the afternoon, a symposium on "Access to Ideas — Is Reading Obsolete?" will serve a dual purpose. Since the symposium will be held in the new air-conditioned Charles Hayden Memorial Library, it will afford visitors an opportunity to see Technology's latest educational building where emphasis is on the cultural side of life. At the same time, the symposium, under the direction of William W. Garth, Jr., '36, chairman of the Symposium Committee, will bring together three distinguished speakers in the field of the graphic arts. These men will discuss the present state of the graphic arts, the threat of other media (such as motion pictures, radio, and television) in dispensing



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Joseph J. Snyder, 2-44
Treasurer of M.I.T.

the spoken and written word, and the vast new fields which research may be expected to open in making knowledge accessible to a larger number of persons.

Following the symposium, President and Mrs. Killian will meet Alumni at a reception in the President's House, a stone's throw from the Charles Hayden Memorial Library.

For the first time, the ever popular "Stein-on-the-Table Banquet" will be held at the Copley Plaza in Boston. Table arrangement will be by classes, as has been customary in the past. Alumni will have an opportunity to learn from President Killian the present state of affairs at the Institute. Wives of Alumni are invited to attend the special Ladies' Banquet in the air-conditioned Sheraton Room of the Copley Plaza.

A capable and hard-working group of committees is now actively engaged in putting the finishing touches on the arrangements for Alumni Day. The personnel of the committees is as follows: *General Chairman of Alumni Day*: Hugh S. Ferguson, '23; *Deputy Chairman of Alumni Day*: Dunbar L. Shanklin, '23; *Banquet*: Allen Latham, Jr., '30, chairman (*also Deputy Chairman of Alumni Day*), A. Robert Tonon, '22, David W. Skinner, '23, William H. Carlisle, Jr., '28, Robert L. Johnson, '38; *Departmental Reunions*: Julius A. Stratton, '23, chairman, Philip A. Stoddard, '40, Kenneth R. Wadleigh, '43; *Ladies' Events*: Mrs. Thomas P. Pitre, chairman, Mrs. Hugh S. Ferguson, Mrs. Ralph T. Jope, Mrs. Henry B. Kane, Mrs. James R. Killian, Jr., Mrs. Allen Latham, Jr., Mrs. C. Adrian Sawyer, Jr.; *Luncheon*: James Donovan, '28, chairman, John M. Nalle, '20, Albert O. Wilson, Jr., '38, Samuel J. Mason, '47, Otto E. Kirchner, Jr., '49; *Registration*: Wolcott A. Hokanson, Staff, chairman, G. Edward Nealand, '32, Robert E. Hewes, '43; *Symposium*: William W. Garth, Jr., '36, chairman, John T. Rule, '21, John E. Burchard, '23, and Vernon D. Tate, Staff; *Transportation*: Emmons J. Whitcomb, '11, chairman, Malcolm S. Stevens, '34, John L. Danforth, '40.

Aide to Killian

ROBERT M. KIMBALL, '33, Administrative Associate Director of the Los Alamos Scientific Laboratory in New Mexico, who has been on leave of absence from M.I.T. since 1948, will return in May to become executive assistant to the president.

Mr. Kimball was administrative assistant to the president of M.I.T. when he went to Los Alamos. Upon his return to the Institute he will serve as the president's deputy in a number of important administrative activities, and will represent President Killian in all relations with the Institute's Development Fund Office.

Upon the retirement of Edward L. Moreland, '07, Executive Vice-president of the Institute, on June 30, Mr. Kimball will become chairman of the Building Committee and will have administrative responsibility for overseeing the Institute's building projects, and for all space changes at M.I.T. This committee has the responsibility for recommending to the president and Executive Committee the appropriate types of building for the Institute and their location, as well as the approval of all contracts for building operations.

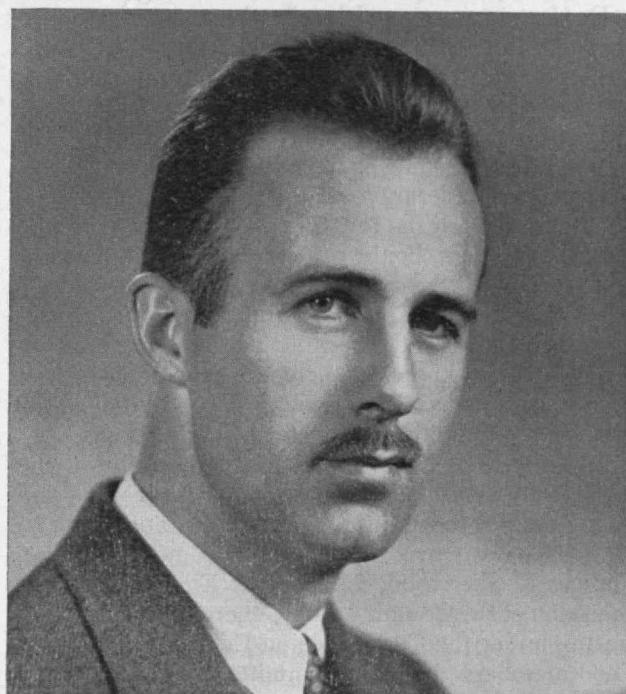
Educational Survey

FOUR Faculty members outlined the results of a survey of educational methods at the Institute before 102 members of the Alumni Council at its 274th meeting in the Campus Room of the Graduate House on March 27. Presiding at this meeting was C. Adrian Sawyer, Jr., '02, President of the Alumni Association.

During the business portion of the meeting, Karl T. Compton, chairman of the Corporation, outlined the organization of the Faculty committee which produced the survey report; and Donald P. Severance, '38, Secretary of the Alumni Association, reported changes in class affiliation for four Technology graduates. Also reported were visits to nine alumni clubs, during March, by six members of the Institute's Faculty or staff, from points as near as Wellesley, and as remote as Mexico City.

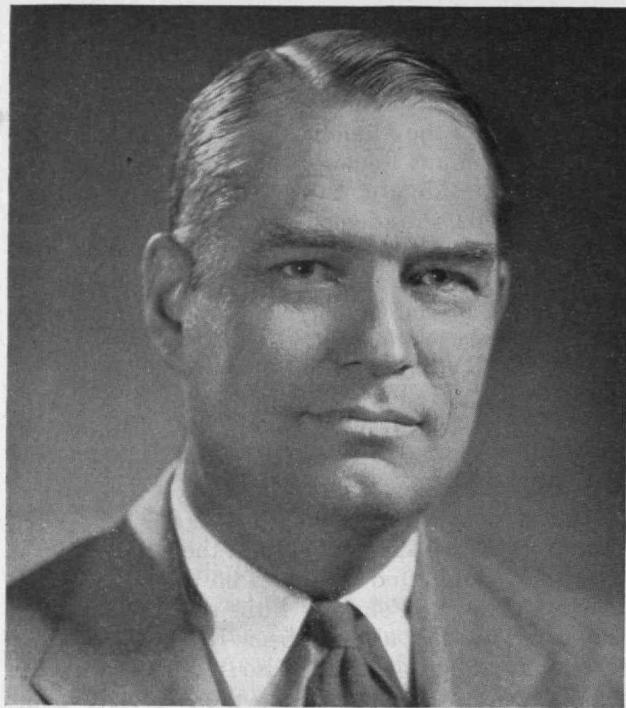
Parke D. Appel, '22, chairman of the Committee on Assemblies, submitted his report on the Boston Mid-winter Meeting of February 4, the successful conclusion of which has already been reviewed in these pages (March, page 263). Also reported was the action taken in the afternoon by the Executive Committee of the Association that "the World War II Memorial shall include only alumni known to have died while in the Military or Naval services of the United States, or of an Allied Power, between the date of entry of the respective Powers into World War II and V-J Day, August 14, 1945." Plans for Alumni Day, 1950, as recorded on this and the preceding page, were announced, and personnel for Alumni Day committees was named.

Henry B. Kane, '24, Director of the Alumni Fund, reported that 10,550 Alumni had contributed approximately \$165,000 for the year ending March 31, 1950, and that total contributions for the 10-year life of the Fund amount to \$1,386,000.



M.I.T. Photo

Robert M. Kimball, '33
Executive Assistant to the President of M.I.T.



M.I.T. Photo

John T. Rule, '21

Chairman, Course IX, General Science and General Engineering

President Sawyer next introduced Julius A. Stratton, '23, Provost of the Institute, who spoke on the origin of the Faculty Educational Survey Committee, the scope of its problem, and the difficulties which had been encountered by this committee in examining an organization as progressive and healthy as the Institute. He announced that a summary and the report itself would soon be made available to the Alumni. Dr. Stratton closed with a tribute to Professor Emeritus Warren K. Lewis, '05, chairman of the Committee on Educational Survey, who was the next speaker.

Dr. Lewis mentioned briefly the committee's conclusion that greater emphasis should be placed on the undergraduate program. It is the consensus of the committee that M.I.T. should not lengthen its undergraduate program from four years to five or six. Dr. Lewis indicated some of the advantages in support of a four-year undergraduate program; reported that his committee felt the Institute should not expand into a university, but should restrict itself to the fields of which science is the core; and stressed the committee's belief that the M.I.T. undergraduate program should be of increased breadth, permitting sound understanding in areas of knowledge outside the student's own narrow profession. He stressed the need to reduce the coverage of individual subjects and curriculums, with emphasis on the development of the capacity of the student to handle new problems by himself — and giving greater recognition to better teaching.

Dr. Lewis then introduced the next speaker, Thomas K. Sherwood, '24, Dean of Engineering, and chairman of the Committee on General Education, operating under the Committee on Educational Survey. The members of his committee recommend a broader undergraduate program. To this end they recommend more humanities as an essential element of each man's professional training — extending the pres-

ent humanities program from eight subjects to 10. They stressed that composition should be taught not only in the freshman year, but rather that emphasis on good writing should appear throughout each student's four years at the Institute. Dean Sherwood stressed the belief that such a program would attract a broader-gauge applicant for admission and provide our Admissions Office an opportunity for greater selection.

Dr. Lewis next introduced Professor W. Rupert Maclaurin, of the Department of Economics and Social Science, who is chairman of the Committee on Staff Environment. Professor Maclaurin emphasized his committee's feeling that the Institute should develop more of a life of its own. There is now little choice for the Faculty but to withdraw from the Institute at the close of the day at 5:00 P.M. Hence this committee recommends that the Institute endeavor to house as high a percentage of the student body as possible; investigate the question of a house plan, or a modified house plan; consider additional campus area and improve some of its present campus spots; and encourage junior faculty members to live in the area of the Institute. An adequate Faculty Club, which could also serve for Faculty-Alumni gatherings, was recommended as an important link in improving campus living at Technology.

To Head General Courses

THE appointment of Professor John T. Rule '21, Head of the Section of Graphics at the Institute since 1938, to be chairman of the Course in General Science and General Engineering, has been announced by President Killian. Professor Rule, who will continue to administer the Section of Graphics, will succeed Professor Ralph G. Hudson, '07, who has been in charge of the Course since 1932 and will retire next July with the rank of professor emeritus.

Professor Rule has had five years' experience as a consulting engineer and held several industrial posts, including two years as industrial engineer in charge of construction at the St. Louis plant of the Curtiss Wright Corporation. He then continued his consulting practice and later became head of the science and mathematics department of the Taylor School in St. Louis. He joined the Faculty of the Institute as an assistant professor of drawing in 1936 and two years later was promoted to the rank of associate professor of drawing and descriptive geometry. He became a full professor in 1947.

He is widely known for his research and development in various phases of three-dimensional vision, including stereoscopic drawings, photography, motion pictures, and general stereoscopic theory. Beginning in 1941, he devoted most of his time to war research with the Polaroid Corporation and was in charge of the development of the Mark I machine gun trainer for the United States Navy. In this device Professor Rule applied stereoscopic techniques to simulate combat conditions encountered in actual aerial warfare. He was also associated with other research projects, chiefly with the Bureau of Ordnance. During part of this period he spent a portion of his time with the Polaroid Corporation on special war projects.

Seven Summer Session Subjects

SEVEN special courses to be offered as part of an expanded program of activities during the 1950 Summer Session at the Institute have been announced by Walter H. Gale, '29, Associate Professor of Aeronautical Engineering and Director of the M.I.T. Summer Session. All in specialized technical fields, the courses will be presented by members of the M.I.T. Faculty and 11 prominent visiting lecturers.

All are designed primarily for industrial, technological, and scientific personnel, according to Professor Gale, although in most cases the special programs will be open also to qualified M.I.T. students.

The seven special courses announced by Professor Gale are in the fields of climatology, colloid chemistry, food technology, mathematics, instrumental analysis, infrared spectroscopy, and high-temperature ceramics. They will be given in Cambridge in the Institute's main educational buildings, according to the schedule:

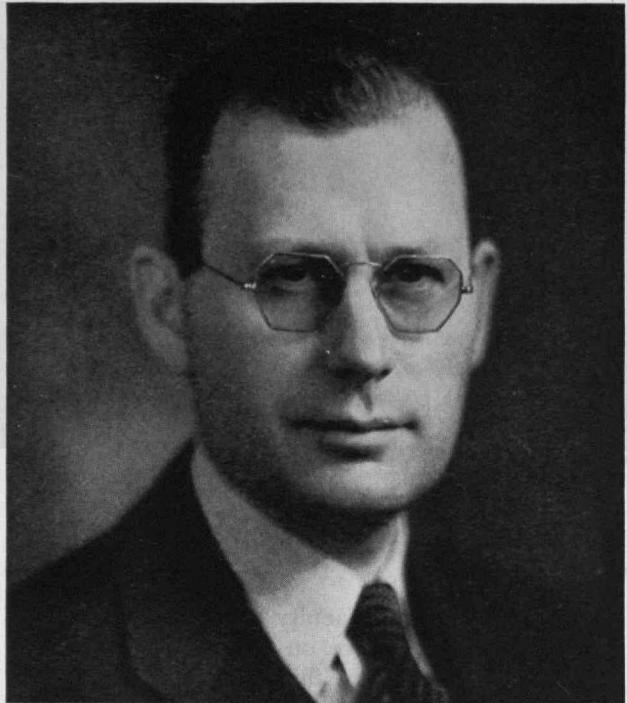
<i>Subject</i>	<i>Date</i>
Food Technology	June 12 – June 30
Climatology, Part I	June 12 – July 21
Climatology, Part II	July 24 – September 2
Colloid Chemistry of Elastomers	June 26 – July 14
Summer Fellowships for Science Teachers	July 5 – August 11
Infrared Spectroscopy	July 24 – July 28
Infrared Spectroscopy, repeated	July 31 – August 4
Instrumental Analysis, Electrical Methods	July 10 – July 14
Instrumental Analysis, Optical Methods	July 17 – July 21
High-Temperature Ceramics	August 7 – August 18

All seven courses, for which the M.I.T. Summer Session Office is making administrative arrangements, reflect the Institute's desire to provide "stimulating and instructive summer sessions to the many groups, both in and out of the Institute, whose primary interests lie in, and whose welfare depends on, latest technological information," according to Professor Gale.

Steersmen for Geology

ROBERT R. SHROCK has been appointed head of the Department of Geology at the Institute and Patrick M. Hurley, '40, assumes duties as executive officer of the Department, according to President Killian.

Dr. Shrock entered Indiana University in 1922, graduating with the degree of bachelor of arts with special honors in geology in 1925. He continued his studies in this field and was awarded his master's and doctor's degrees in 1926 and 1928. His teaching career began at the University of Wisconsin. He was an instructor there from 1928 to 1929, and then became an assistant professor and served until 1937 when he joined the Faculty of M.I.T. He was advanced to the rank of associate professor in 1943, was named executive officer of his Department in 1946, and became a full professor last year. During the year 1948-1949 Dr. Shrock was a visiting lecturer of geology at Harvard University. For the past 20 years he has acted as



M.I.T. Photo

Robert R. Shrock

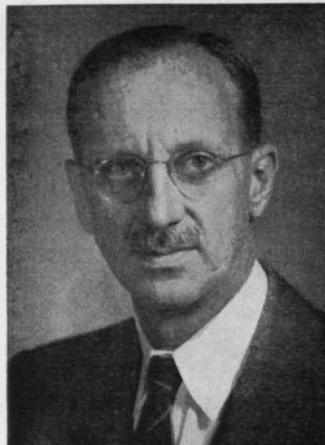
Head, M.I.T. Department of Geology

consultant for mining and petroleum companies, museums, and state geological surveys.

In 1941 to 1945 he carried out important geological field studies concerned with the evaluation of bauxite deposits in this country and in Haiti, the Dominican Republic, Cuba, Jamaica, and Mexico. From 1946 to 1950 he served as a consultant to the Research and Development Board of the National Military Establishment. Dr. Shrock is widely known for his contributions to the literature of geology and is the author of many important papers and books, including *Invertebrate Paleontology* with William H. Twenhofel, and *Index Fossils of North America* which he wrote with Professor Emeritus Hervey W. Shimer. He is also the author of *Sequence in Layered Rocks*.

Professor Hurley, the new executive officer of the Department of Geology, attended Victoria College in British Columbia for two years and then spent four years at the University of British Columbia where he received the Dunsmuir Scholarship and the Engineering Institute of Canada Award for his high scholastic record. He received his bachelor of applied science degree there in 1934, and the degree of doctor of philosophy from M.I.T. in 1940. He was awarded the Royal Society of Canada Fellowship for two years for research on methods of geologic time measurement by radioactivity. Dr. Hurley joined the Institute staff as a teaching fellow in geology in 1938, and was appointed assistant professor in 1946.

Dr. Hurley's field experience includes the post of mining engineer and geologist of the Vancouver Island Gold Mines, Ltd. and he was later geologist for the Golden Zone Mines, Ltd. at Hedley, British Columbia. During World War II he was research associate with the National Defense Research Committee on antisubmarine warfare and underwater ballistics at Columbia University and the California Institute of Technology.



M.I.T. Photos
W. P. Allis, '23



E. W. Boehne, '28



A. G. H. Dietz, '32



C. F. Floe, '35

Stepping Up

PROMOTIONS on the Faculty of the Institute which will become effective on July 1 have been announced by President Killian. The 56 changes in academic status include 8 advancements to full professorships, 12 to associate professorships, 18 to assistant professorships, and 18 staff members now to be rated as instructors.

Members of the Faculty who have been promoted to the rank of full professor are: Albert G. H. Dietz, '32, of the Department of Building Engineering and Construction; Clair N. Sawyer of the Department of Civil and Sanitary Engineering; Harold A. Freeman, '31, Department of Economics and Social Science; Eugene W. Boehne, '28, and Jerome B. Wiesner, both of the Department of Electrical Engineering; Raphael Salem, Department of Mathematics; Carl F. Floe, '35, Department of Metallurgy; and William P. Allis, '23, Department of Physics.

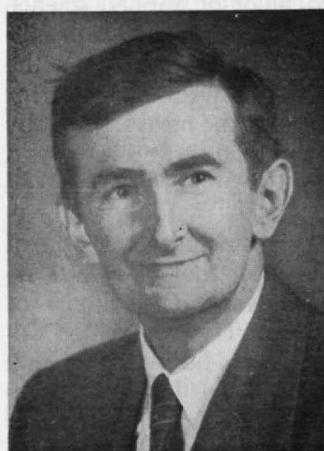
Assistant professors who are promoted to the rank of associate professor are: David N. Hume and John D. Roberts, both of the Department of Chemistry; Burnham Kelly, Department of City and Regional Planning and Director of the Bemis Foundation; Robert J. Hansen, '48, and Myle J. Holley, Jr., '39, both of the Department of Civil and Sanitary Engineering; Robert L. Bishop, Department of Economics and Social Sci-

ence; Duncan S. Ballantine, Department of English and History; Warren Ambrose and Francis B. Hildebrand, '40, both of the Department of Mathematics; John E. Arnold, '40, and Ernest P. Neumann, '38, both of the Department of Mechanical Engineering.

In addition to his promotion to the rank of associate professor, George B. Thomas, Jr. has been named executive officer of the Department of Mathematics.

Joining the ranks of the Faculty by becoming assistant professors are: Sidney Lees, '48, Department of Aeronautical Engineering; Demitrios A. Polychrone, '47, Department of Building Engineering and Construction; William E. Ritchie, 2-44, Department of Business and Engineering Administration; Edward A. Mason, '48, Department of Chemical Engineering; Donald R. F. Harleman, '47, Department of Civil and Sanitary Engineering; Richard B. Adler, '43, and Alexander Kusko, 2-44, both of the Department of Electrical Engineering; John L. Bastian, E. Neal Hartley, C. Conrad Wright, all of the Department of English and History; Henry Sherman, 6-46, Department of Food Technology; Arthur E. Johnson, Section of Graphics; George L. Nelson, '43, James B. Reswick, '43, Morton S. Silberstein, 6-45, David I. Sinizer, and Charles O. Smith, '47, all of the Department of Mechanical Engineering; and John C. Johnson, 6-46, Department of Meteorology.

(Continued on page 384)



M.I.T. Photos
H. A. Freeman, '31



R. Salem



C. N. Sawyer



J. B. Wiesner

BUSINESS IN MOTION

To our Colleagues in American Business ...

• The non-technical public seems to have a general impression that the problem of the constructive use of the disintegrating atom has arisen only since Hiroshima. The fact is, however, that man-made radio-active isotopes were being used in research and medicine before the first atomic pile was built. Revere, for example, in 1941 sponsored a scientific investigation of the corrosion process known as dezincification, using tracer elements created in a cyclotron. The purpose was to discover why it is that the addition of a minute amount of an extra element makes copper-zinc alloy condenser tubes much more resistant to corrosion. We knew that certain elements had that effect, but before we could take full advantage of them, it was necessary to know how the result was brought about. Then it would be possible to abandon the rule of thumb, and prescribe accurate percentages of a chosen inhibitor. Measurement is part of science.

Dezincification is a process that takes place in uninhibited condenser tubes, materially shortening their life. The alloy seems to dissolve away from small local areas, and the zinc is carried off, while the copper is redeposited as a porous plug. It is an electro-chemical phenomenon, chiefly, though sometimes there is evidence that a mechanical factor, such as scale, may play a part in initiating the attack.



Since cyclotrons are not conventional equipment in an industrial laboratory such as Revere's, we engaged a prominent technical college to undertake the work. Its cyclotron produced the tracer elements or radio-active isotopes of the inhibitors. These were dissolved, and the radio-activity measured. A plate of the copper-zinc alloy was immersed in the solution, and from time to time the amount of radioactive material deposited upon it was measured.

The nature of the deposited film was determined by the electron-diffraction method. This was in effect an accelerated test for dezincification and its inhibition, and was repeated many times with solutions of varying concentration. In the end it produced not only a clear picture of the process, but accurate measurements of it.

Research into the fundamentals of materials, using radio-active tracers, thus is not new. Many scientifically minded companies besides Revere have employed the method, and since the atomic piles have made such elements available in larger quantities at less expense, they are being used quite generally. No matter what you make, nor from whom you buy your materials, it is quite possible that somewhere in the background some abstruse scientific investigation has been done or is now going on, employing the atom as a guide to better products.

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THE INSTITUTE GAZETTE

(Continued from page 382)

Members of the staff advanced to the rank of instructor include: Edward E. David, Jr., '47, Lawrence A. Harris, '48, Charles H. O'Grady, Ronald E. Scott, Henry E. Singleton, '40, Paul E. Smith, Jr., Paul E. Stoff, '49, and Charles A. Stutt, all of the Department of Electrical Engineering; Harry F. Davis, 2d, '48, Talmaage Y. Hicks, and John A. Nohel, all of the Department of Mathematics; John F. Brady, '48, Jack B. Chaddock, '49, David K. Felbeck, '49, Stewart W. Sennet, '49, and Fredman J. Walcott, Jr., 2-44, all of the Department of Mechanical Engineering; Frank T. Bodurtha, Department of Meteorology; and James E. Archer, Department of Physics.

Turntable for Tumors

A NEW method of treating deep-seated malignant tumors, which combines the use of 2,000,000-volt x-rays with a rotational system of administration, was announced in April at M.I.T. Techniques developed and improved by John G. Trump, '33, Associate Professor of Electrical Engineering at M.I.T., in research made possible by the American Cancer Society, have been used by radiologists of the Lahey Clinic and the Massachusetts General Hospital in treating more than 50 patients in a special high-voltage x-ray laboratory at the Institute.

"This is the most promising method evolved so far of treating deep tumors susceptible to radiation therapy, including many cases previously considered inaccessible," Dr. Hugh F. Hare of the Lahey Clinic reported. "While the clinical disappearance of the malignancies under treatment has been most gratifying, it must be remembered that a period of years is required to prove any new method of cancer treatment."

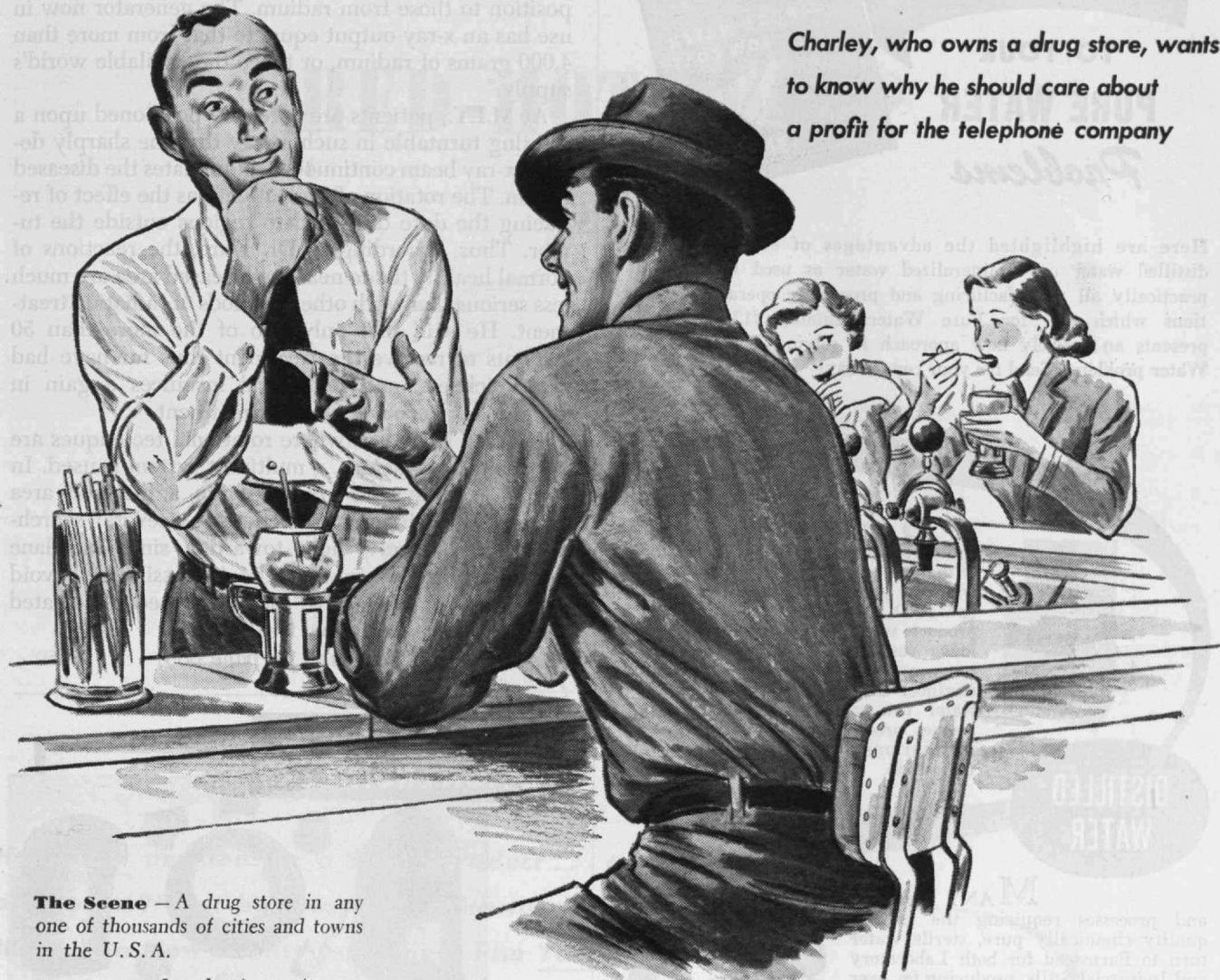
Though he regards the method as a significant step forward in cancer treatment, Dr. Hare emphasized that many malignancies are too far advanced at the time of recognition and diagnosis to yield to this or other known treatment. It is only after careful clinical evaluation of each case that this high-voltage radiation treatment can be recommended over other available forms of cancer therapy.

The 2,000,000-volt x-rays which are one important feature of the new procedure are produced by an electrostatic generator developed by Dr. Trump and colleagues at M.I.T. and the High Voltage Engineering Corporation in Cambridge. It is based on principles first used by Robert J. Van de Graaff, Associate Professor of Physics at M.I.T., in the construction of a high-voltage generator in 1933. The use of gas at high pressure for insulating such high-voltage machines has made it possible to build compact generators which are now being used in hospitals and other research centers. The machine now in use at M.I.T. was the first commercially built model of its type to be placed in operation.

(Continued on page 386)

"What Makes It Good for Me?"

Charley, who owns a drug store, wants to know why he should care about a profit for the telephone company



The Scene — A drug store in any one of thousands of cities and towns in the U. S. A.

The Time — Lunch time. A man from the telephone company has dropped in. He's chatting with his friend Charley, who owns the store.

CHARLEY: "What d'ya mean — it's good for me when the telephone company makes a profit? You give me good service and all that but why should I care whether you make money or not? I'm having my own troubles, trying to put in a bigger soda fountain."

AL: "What d'ya mean, 'trying'? Can't you just up and do it?"

CHARLEY: "I've got to find me a partner with some capital. These things cost money."

AL: "Sure they do! It's the same with us at the telephone company. To keep

on giving you good service, and put in telephones for people who want them, we must have a lot more central office equipment and cable and other things. And to buy it, we have to get money from our stockholders. They expect a profit — just like your partner would."

CHARLEY: "I guess you're right. Nobody would invest his money here unless I could earn him a profit."

AL: "And here's something else, Charley. Those girls there at the far end of the fountain. They're telephone girls. They're spending a part of their wages with you — putting money into your till to help you make a profit. Thousands of dollars of telephone payroll money are spent right in this town, every week."

ADEQUATE RATES AND EARNINGS for the telephone company have a far-reaching effect. For only a strong and healthy telephone company can pay good wages, contribute to the prosperity of the community and provide an improving service for telephone users. Only through adequate rates and earnings can the telephone company —like Al's friend Charley in the drug store—attract the new capital that is needed to carry on the business.

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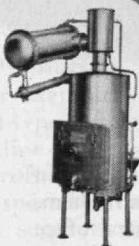


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THE INSTITUTE GAZETTE

(Continued from page 384)

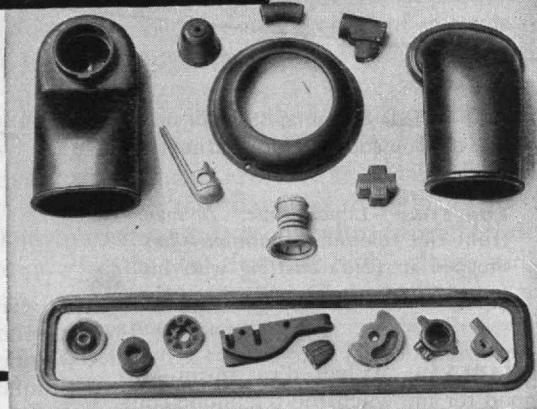
"Two-million-volt x-rays," according to Dr. Trump, "are fully equivalent in penetration and spectral composition to those from radium. The generator now in use has an x-ray output equal to that from more than 4,000 grams of radium, or twice the available world's supply."

At M.I.T., patients are carefully positioned upon a rotating turntable in such a way that the sharply defined x-ray beam continuously illuminates the diseased region. The rotation of the patient has the effect of reducing the dose delivered to regions outside the tumor. Thus, according to Dr. Hare, the reactions of normal healthy tissue near the diseased area are much less serious than with other methods of radiation treatment. He said that only two of the more than 50 patients to receive the treatment thus far have had x-ray sickness, and in several instances a gain in weight has occurred during treatment.

In some instances, where rotational techniques are not found satisfactory, a multiport system is used. In this case, x-rays are directed into a diseased area from several different directions, as several searchlights might throw light toward a single airplane target. Both techniques make it possible to avoid severe burns which have sometimes been associated with intensive radiation treatment.

(Continued on page 388)

memo to- DESIGN ENGINEERS



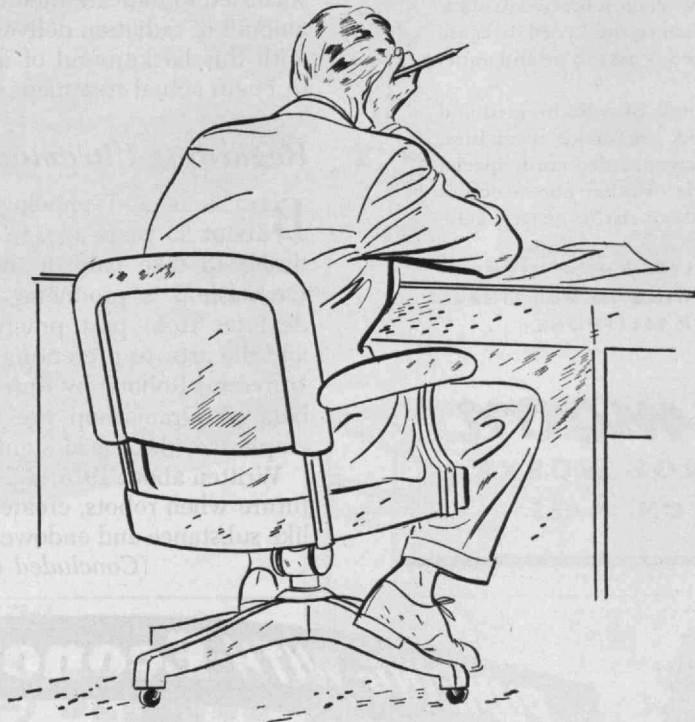
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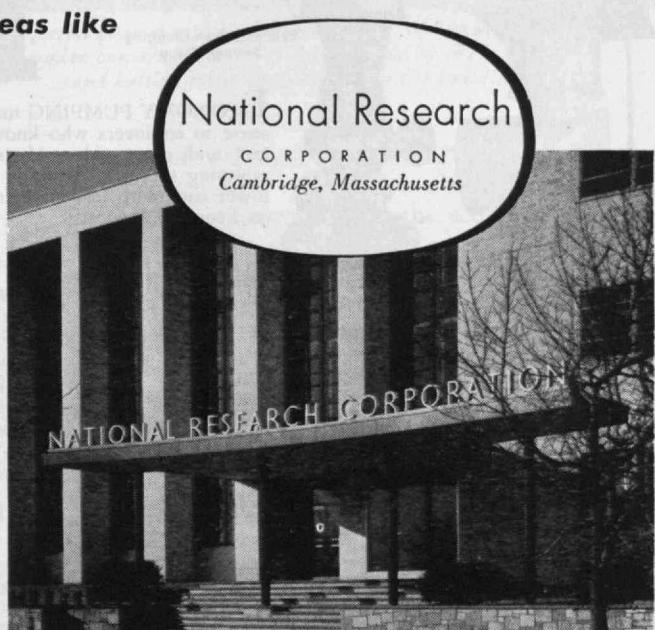
- perfected the process which resulted in first commercial production of blood plasma, penicillin and streptomycin.
- originally organized Minute Maid Corporation and brought it to production.
- made important contributions to "today's new metal," Titanium . . . and to metalizing condenser paper and plastic films.
- developed new methods for melting and casting resulting in gas-free metals and alloys of high purity and controlled composition.
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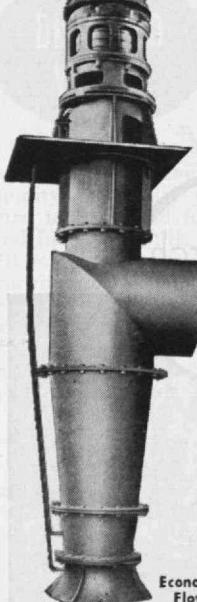
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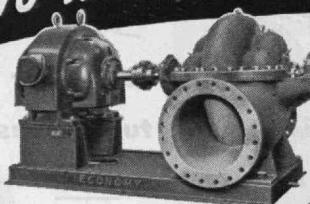
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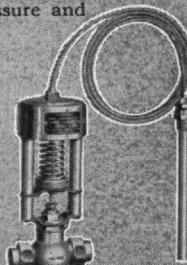
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THE INSTITUTE GAZETTE

(Continued from page 386)

Dr. Hare said that the new technique has been most effective in treating malignancies in the head, neck, throat, lungs, esophagus, and uterus. Its use was preceded by extensive studies of the penetration of high-voltage x-rays made at M.I.T. with research funds provided through the American Cancer Society. In this work, a wooden model, in which the various densities of the human body were accurately duplicated, was used to indicate the depth of penetration and the amount of radiation delivered to various organs. Only with this background of information was it possible to begin actual treatment of patients.

Regarding Ultramodern Robots

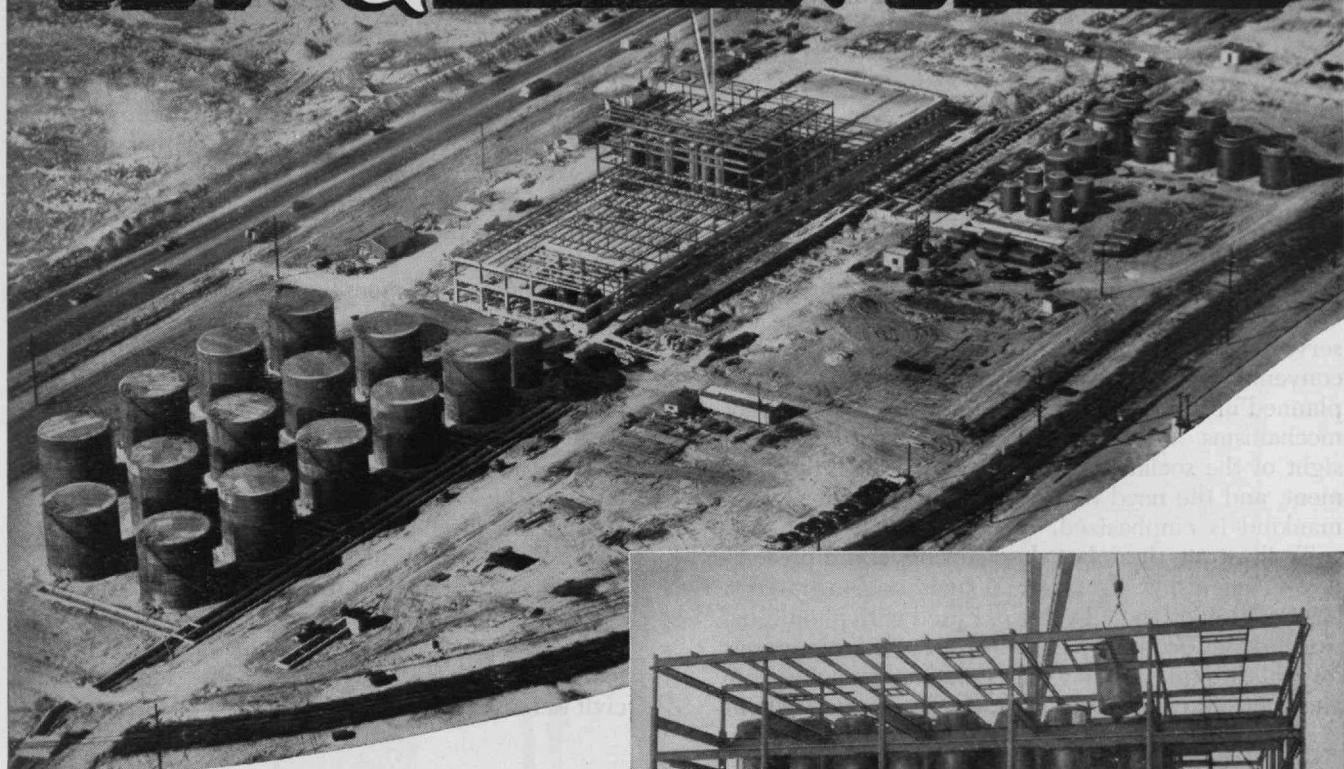
BEGUN as a Technology extracurricular activity about 25 years ago, to give expression to student desire to take part in the lighter side of life, the Dramashop is producing a play this spring which deviates from past practice by combining science and the arts. In presenting the play *R.U.R.* (Rossum's Universal Robots) by Karel Capek, the student members of Dramashop are using this year's play to emphasize the social significance of science.

Written about 1915, *R.U.R.* tells of sometime in the future when robots, created by Rossum from a flesh-like substance and endowed with almost human char-

(Concluded on page 390)



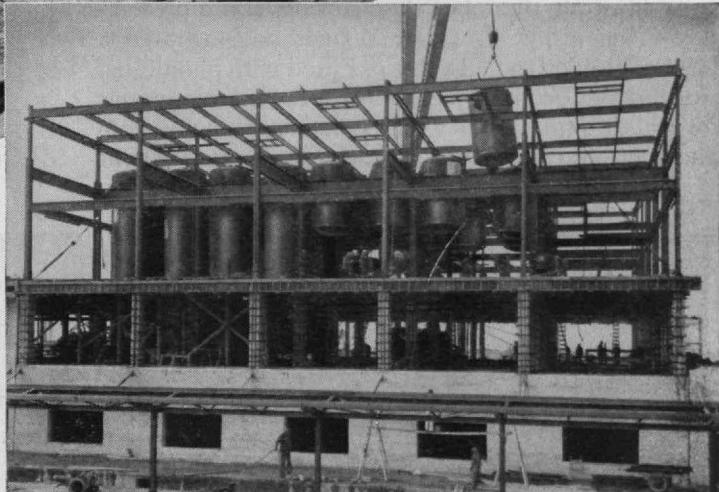
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THE INSTITUTE GAZETTE

(Concluded from page 388)

acteristics, become sufficiently developed to take over almost all human functions. The benefits which the robots are envisioned as creating are short-lived, for the scientists who designed and refined them are at last overpowered by their creations, as indeed is the rest of the world.

To add impetus to Capek's message which calls for a fuller recognition of the social implications of scientific work, the Dramashop sought the aid of Professor Norbert Wiener of the M.I.T. Department of Mathematics, in presenting a prologue to *R.U.R.* In his prologue, Professor Wiener compares the theme of Capek's play with events now taking place. He observes that although they may not take the form of the conventional robot, many of the mechanisms now planned or already constructed, are in essence robot mechanisms. Again the audience is urged not to lose sight of the social implications of scientific development, and the need for science to serve, not master, mankind is emphasized.

To illustrate the robot character of certain present-day mechanisms, Professor Wiener demonstrated a light-controlled model vehicle. Fitted with phototube, scanning and control mechanisms, the vehicle travels toward the light source which it detects. Running here and there in response to certain stimuli, and without

guidance by human hands, the "robot" illustrated, in a limited but obvious way, the degree to which present-day machines (even elementary ones) are able to conduct operations previously performed by the human animal alone.

Dean Bunker Studies Radiological Monitoring Techniques

P AUL A. DEVER, Governor of Massachusetts, has appointed John W. M. Bunker, Dean of the Graduate School at M.I.T., as representative of that state in a five-week, instructor-training course in radiological monitoring techniques which is being given at the Brookhaven National Laboratory in Upton, Long Island, N.Y.

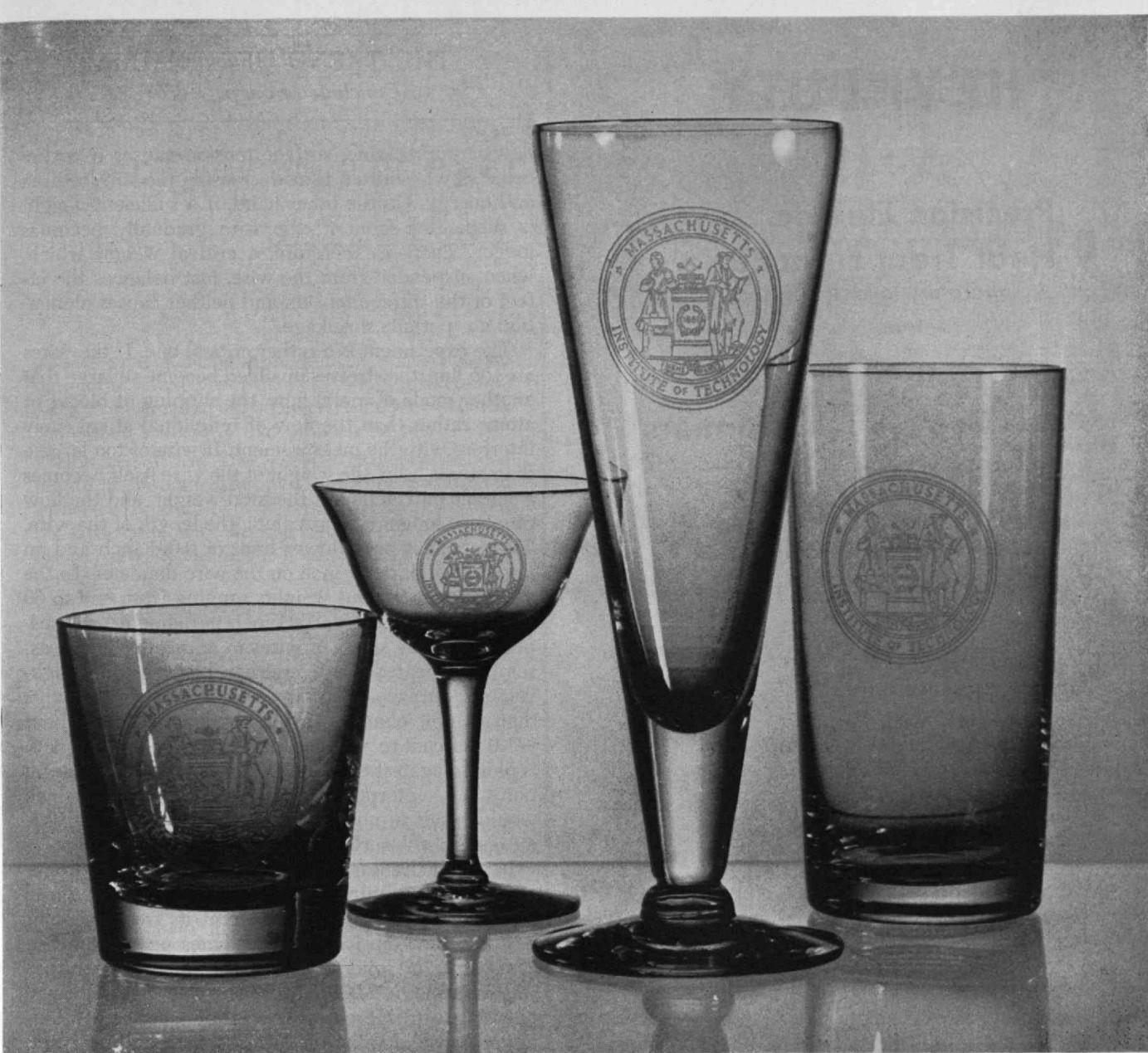
The courses are sponsored by the Division of Biology and Medicine of the Atomic Energy Commission, and are designed to provide information on monitoring radioactivity as part of the program for wartime disaster relief planning. Similar courses are being offered at Oak Ridge, Tenn., the University of California at Los Angeles, and later, at Illinois Institute of Technology, Chicago, and Reed College, Portland, Ore.

Students in the courses were selected for backgrounds in the physical sciences as well as teaching experience, so they in turn can instruct local science teachers in monitoring techniques. It is expected that these local science teachers could then be utilized to teach monitoring teams as part of state and municipal civil defense activity.

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THE TREND OF AFFAIRS

(Concluded from page 360)

flow is appreciable, surface tension causes it to become slowly shorter, thus decreasing the surface area and energy. On the other hand, if a sufficient weight is suspended from it, the wire gradually becomes longer. There is, therefore, a critical weight which, when suspended from the wire, just balances the effect of the surface tension and neither causes elongation nor permits shrinkage.

The experiment is a rather critical one. If the wires are too fine, the stresses involved become so large that another mode of metal flow, the slipping of blocks of atoms rather than the flow of individual atoms, may interfere with the measurement. If wire of too large a diameter is used, the weight of the wire itself becomes a significant fraction of the total weight, and the flow rate is no longer uniform along the length of the wire. These factors put a lower limit of 0.001 inch and an upper limit of 0.007 inch on the wire diameter. In the experiments, various weights ranging from one to 60 milligrams (for wires 0.005 inch in diameter) are suspended from a series of wires in a metal cell. The assembly is heated for several hours or days in a high-vacuum furnace. The wires with different weights then exhibit changes in length ranging from about -1.0 per cent to +1.0 per cent. The change in length is plotted against the corresponding load, and the null point (i.e., interpolated value of the weight which would result in neither shrinkage nor extension) is a measure of the surface-tension force.

In normal liquids, surface tension decreases with increasing temperature. This was also found to be true for solid copper. Liquid copper at its freezing point has a surface tension of 1,200 dynes per centimeter. The value for solid copper at the same temperature was found to be 1,370. Thus, there does not appear to be any great difference between the surface of a liquid and a solid when the latter is near melting point.

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So when the Army sent me to a training camp near Boston, I looked up some of the men in New England Mutual's home office. At the same time, I met the girl and married her, and naturally I began to think more definitely about a post-Army career. Together we cataloged the advantages and disadvantages of many different careers.

But each time we came back to life insurance. It offered—in a way no other career seemed to— independence, security, public service, and unlimited earning possibilities. As a result of these deliberations, I enrolled in New England Mutual's basic training course while I was still in the Army Air Corps.

After the war—in April of 1946 to be exact—I joined the New England Mutual agency in Denver. In addition to extensive training here in Denver, I have had two courses at the home office in Boston. I have also attended several inspiring regional meetings and have enjoyed and profited from my 4-year association with this company.

I have made a much better living than would have been possible in a salaried job, and I have saved a substantial fund for future needs. At the present time, I am spending half my time working with the new men in our agency, helping them find the same satisfactions that I have enjoyed as a career life underwriter.

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AMERICAN EDUCATION

(Continued from page 377)

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to an exact problem. The solution consists in setting up the optimum conditions which will lead to the greatest probability of success. In my opinion the analogy is very close. That is precisely what we should attempt to do in our educational system — that and no more. The body of literature and the supply of scientific tools to attack complex problems involving humans is growing at a rapid rate. Von Neumann's *Theory of Games*,³ Wiener's *Cybernetics*⁴ (from the Greek *steersman*) are publications of particular significance in this field. Even the systems analyses of telephone circuits (which involve humans) and of military tactics contribute to the field.

To carry the argument a little closer to education itself one can well cite an article "The Science of Human Learning, Society, Culture and Personality" by George P. Murdock in the *Scientific Monthly* for December, 1949. The gist of this presentation is that the past decade has witnessed a revolutionary development in the psychological and social sciences which is hardly yet realized. This development does not consist of any marvelous new discoveries in particular fields, but a realization and a demonstration that at least four different fields of knowledge dealing with human beings interlock and integrate into a single system which is balanced, sensible, and workable. These four blocks of theory are: "learning and behavior developed by the behavioristic psychologists, the theory of social relationships and social structure developed by sociologists and social anthropologists, the theory of culture and cultural change developed by anthropologists with significant assistance from sociologists, and the theory of personality and its formation developed by psychoanalysts and psychiatrists."

Professor Murdock then proceeds to expand on the improvements in understanding of human society which have been forthcoming and to project the possibilities of obtaining a real understanding of the peculiar ways of men. If real understanding actually is forthcoming, then one may well expect eventual significant applications, particularly in education. In his evaluating paragraph Professor Murdock contends: "But whether or not such high aims are realized, the emergent integration of the basic theoretical systems of the social and psychological sciences undoubtedly represents one of the great turning points in the history of science. In significance it may prove the equal of the contributions of Darwin and Mendel in biology. In kind, however, it perhaps resembles more closely the extraordinary integrating achievement of Einstein in the field of physical science."

Some might be charitably disposed to forgive Professor Murdock for his enthusiasm in a field in which he is expert and enthusiastic, but to reserve a block of skepticism and cynicism for his contentions. Others will feel that his argument makes considerable sense and that the potentialities, by all means, should be explored.

(Continued on page 396)

³ Von Neumann, John (Princeton: Princeton University Press, 1944), \$10.00.

⁴ Wiener, Norbert (New York: John Wiley and Sons, Inc. [Technology Press book], 1948), \$3.00.

THE TECHNOLOGY LOAN FUND BOARD

REPORT FOR THE YEAR 1949

For the first calendar year since the war, new loans made exceeded repayments on outstanding notes, these totals for 1949 being \$92,354 and \$59,482, respectively. By December 30, 1949, 2,185 men — nearly three-quarters of the 2,935 receiving loans since the Fund was established in 1930 — had completely discharged their financial indebtedness to it.

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March 1, 1950

CUMULATIVE RECORD OF THE TECHNOLOGY LOAN FUND TO DECEMBER 30, 1949

	<i>At Dec. 30 1949</i>	<i>At Dec. 31 1948</i>	<i>Net changes during 1949</i>	
ITEMS OF OUTGO				
Number of men Receiving Loans	2,935	2,791	up	144
Total Amount Loaned	\$2,104,317	\$2,011,963	up	\$92,354
Average Per Capita Loan	\$ 717	\$ 721	down \$	4
ITEMS OF INCOME				
Number of Men Whose Indebtedness has been Completely Discharged	2,185	2,098	up	87
Principal Repayments in Advance	\$ 582,565	\$ 569,224	up	\$13,341
Other Principal Repayments	<u>\$1,127,585</u>	<u>\$1,081,444</u>	<u>up</u>	<u>\$46,141</u>
Total Principal Repayments	<u>\$1,710,150</u>	<u>\$1,650,668</u>	<u>up</u>	<u>\$59,482</u>
Total Principal Matured, Considering "Advance Repayments" as Matured when Paid	\$1,743,299	\$1,683,121	up	\$60,178
Collection Ratio, i.e. Percentage of Total Maturities Paid	98.1	98.	up	0.1
Matured Principal in Arrears	\$ 24,581	\$ 25,335	down \$	754
Actual "Written Off" Accounts	<u>8,569</u>	<u>7,118</u>	<u>up</u>	<u>1,451</u>
Total Maturities Unpaid	<u>\$ 33,150</u>	<u>\$ 32,453</u>	<u>up</u> \$	<u>697</u>
Percentage "Written Off" to Total Loans	0.4	0.3	up	0.1
Percentage Matured Loans in Arrears plus Amount Written off to Total Loans	1.58	1.61	down	0.03
Interest Received	\$ 227,573	\$ 222,958	up	\$ 4,615
Times Interest Received to Matured Loans in Arrears Plus Amount "Written Off"	6.9	6.9	—	—
NOTES OUTSTANDING	\$ 385,598	\$ 354,176	up	\$31,422

AMERICAN EDUCATION

(Continued from page 394)

plored. I am among the latter. I suggest that research in the ways and means and techniques of education of recalcitrant humans should be adequately supported and proceed full steam ahead, not under the aegis of teachers' colleges and amateur psychologists but in the hands of institutions, such as the Yale Institute of Human Relations and the Harvard Department of Social Relations, where there appears to be an understanding of human beings for what they really are, and a facility for making integrated attacks on tremendously complex problems. If such research should be really successful there will come a day when the educational accomplishments will substantially increase, and in shorter periods of time, than at present.

To the confirmed skeptic I should like to point out that only one short decade ago you could count the scientists on the fingers of your two hands who were confident that an atomic bomb could be developed, or that a situation such as held in the Battle of Britain could have ended in victory for the defenders. When experts attain a real understanding of the basic principles of a problem, it is never wise to sell them short on their predictions.

Living and Earning a Living. After all of these words it would seem to be appropriate to refer again to the title and begin resolving the quandary — the conflict between educating to live and educating to earn a living. Though I will undoubtedly be accused of being unsportsmanlike, I will meet that situation by stating that if education were really adequate for modern living, the quandary would disappear. The two objectives are not really opposed: they are interlocking and lie very close together.

In America, for the first time in history, the task of obtaining a bare subsistence, to keep from starving to death, is not much of a chore. Hence the bulk of human effort goes into living — "getting the most out of life" — rather than earning a bare living. There can be no quarrel with that as a basic idea. The worries and the disputes arise from people's choices and methods of getting the most out of life, both en masse and individually. Actually we haven't learned very much about the art of living together in an optimum pattern, for the group as well as the individual, and we will probably stumble along for several generations yet before we can record any real accomplishments. The major task of living, above the subsistence level, is to acquire a sense of value, a knowledge of the world, and the people who inhabit it, of sufficient integrity and thoroughness to serve as an adequate basis for the good life. That is a task for all, not just the erudite.

Considering the limitations of the average mentality, and the inadequacies of the average environment, how is this to be accomplished? No one at this time knows the answer. The steps upward must necessarily be self-generated; they cannot be accomplished by edict. Mussolini and Hitler embarked on rapid-fire and highly successful educational campaigns that really worked. The trouble was that they were the
(Continued on page 398)



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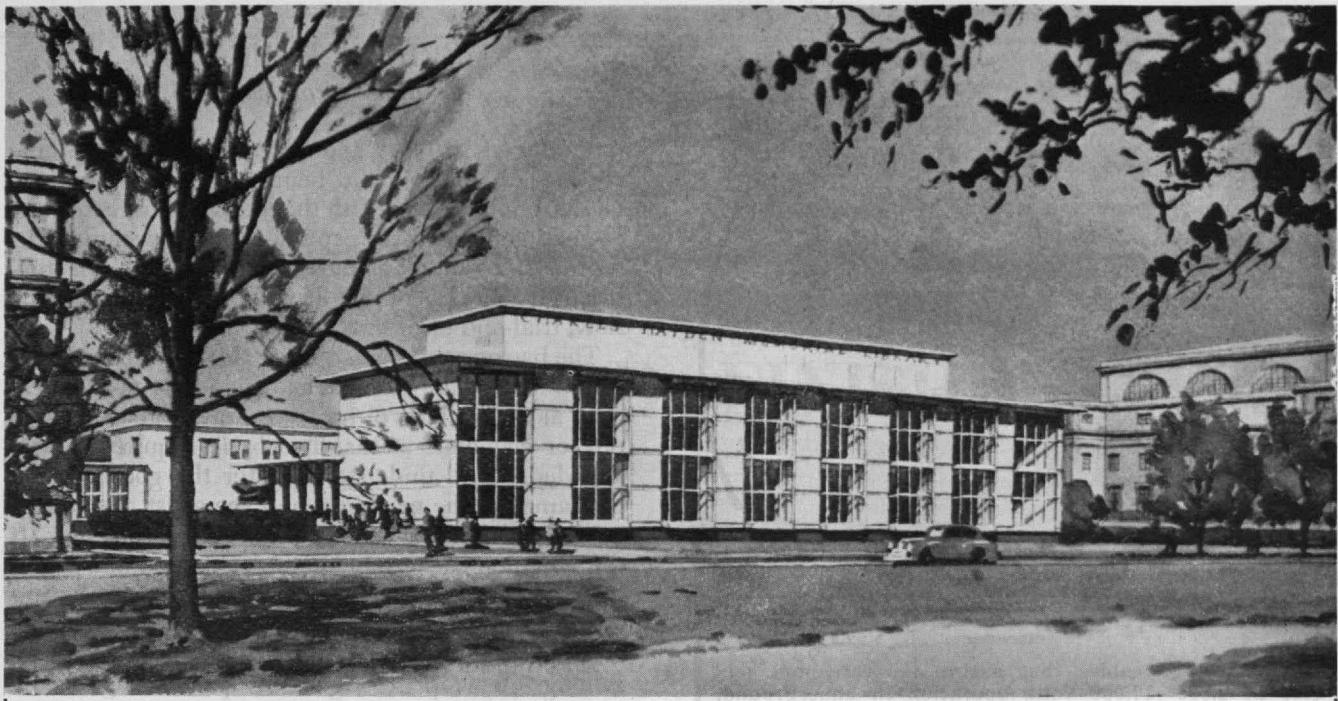
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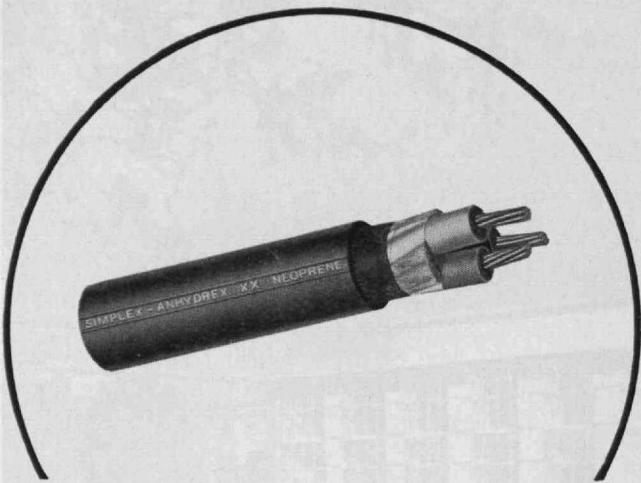
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AMERICAN EDUCATION

(Continued from page 396)

programs of maniacs and not acceptable to a large portion of the human beings who happened to be sharing the world with the dictator pair; hence the dramatic failure of the experiment. The eventual pattern must be sound as measured by human sensibilities or it will not survive. It will only be achieved by slow, trial-and-error methods.

The background for acquiring this desirable pattern of living — whatever that may be — has no delineations along the lines of trade or profession, or geography or economic status. The basic requirements of knowledge and understanding for the good life are the same for the machinist and the artist, the farmer and the physician, the mother and the secretary. If this common background can be obtained, the acquisition of the additional knowledge which is necessary for modern trades and professions will be a relatively simple matter — even though arduous and time consuming. To wrap the argument up in a single statement, it may be said that if we can solve the basic problems of educating for living, the techniques of teaching and training for making a living will likewise be resolved and will be worries of a lower order.

Cross-Fertilization. Who is going to accomplish all these brave deeds? What mouse is going to bell the cat? I can see but one answer to that: the universities,

(Continued on page 400)

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AMERICAN EDUCATION (Continued from page 398)

the fountainheads of new knowledge and its dispensation. But the immediate prospects are that they will not rise to the occasion. Are they inherently incapable, or is there something missing which can be supplied? In my humble opinion the capabilities are there and the lack of performance is due to the lack of a simple ingredient — the cross-fertilization of ideas and educational disciplines. As life has become more complicated, we have become extremely cellular in our specializations and there is no force to unify the branches of knowledge and get them moving in one direction. There was a time when we had natural philosophers. As a substitute we now have six brands of philosophers and 50 breeds of scientists and none make any real attempts to commune with the others. The defects of insularity are not confined to subject matter. Some universities within my ken are so intent on inbreeding the faculty that it has come to the point of incest. If one desires a simple illustration of the effectiveness of cross-fertilization as contrasted to inbreeding, he has only to look at the quite astounding increases in yield that have been achieved by the use of hybrid seed corn. Granted, the example is far removed from education, but it does point up the manner in which biological systems are found to be most effective.

If universities, as a matter of policy, would expend major efforts (it will take some money, too) on the true cross-fertilization of the efforts and thoughts of

the specialists in many fields and between institutions, they will eventually find themselves standing on a firm foundation to do something realistic about education. Without this I fear they will remain at about the present level of fertility, which is probably not good enough. And this cross-fertilization process cannot be confined to the academic walls. It must reach into the community: it must be at least regional in character, to be effective.

What I am proposing here is, of course, not new. All universities have a bit of a bad conscience about the rash of insularity. The instruments of combat are usually confined, however, to a few rather pious social gatherings and an occasional lecture by a visiting dignitary who gives out the year's quota of enlightenment in a depressing hour of monotone. A good faculty club probably has more humanizing influence than either of these ruses, particularly if the billiard tables are level and there is a good bar man.

The efforts to bring the virtues of cross-fertilization and its resulting integration to the student population have been equally timid. Attempted survey courses in the sciences for arts students have been distinguished largely by their inadequacies. Attempts to thrust bits of significant culture down the necks of student engineers have been particularly unsuccessful. Conant's current courses at Harvard on the teaching of science by the case method, which leads to the absorption not only of the history of science but to a real knowledge of the evolution of ideas, probably repre-

(Concluded on page 402)

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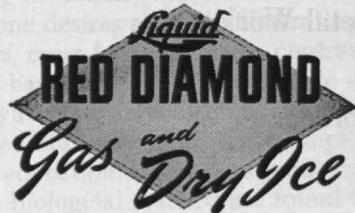
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sent the best efforts in the student field. There should be more and even nobler and broader experiments, tied in closely with the best ideas of the social scientists on what makes people tractable and teachable.

Returning to the faculty level, I will venture the opinion that no real progress will be made in effective cross-fertilization and integration of efforts until there is some bona fide faculty-wide participation in planning and carrying out of some major programs. As far as I know it has not been attempted, at least not in recent generations. It would certainly not be easy. It would require patience, fortitude, determination, diplomacy, time, and unfortunately, money. Objectives would have to be defined and agreed upon, even simple semantics would have to be explored, for the physicists and philosophers do not always agree on definitions or elementary concepts. It would be discouraging at first certainly, but eventually I think that the agenda of faculty meetings would encompass something more than edicts on next year's budgets, mistakes in last year's catalogues, and expositions on new methods to get students to class on time. The method of joint participation of widely divergent experts does work on research teams, which contain as many prima donnas as do faculties, and there is no inherent reason why it cannot work for teaching teams.

What programs, courses, or curriculums do I visualize as subject to joint attack? I don't really know and in the initial phases I don't believe it would make a great deal of difference. When capable, sincere, and earnest men come together with what the Quakers characterize as a "concern," they frequently find a way to do something about it. I suggest that universities could well afford to make faculty-wide efforts to solve the admittedly universal concern over the defects of education. One effort out of 10 might bear some fruit and that would be a fine record.

Perhaps my remarks on the virtues of cross-fertilization of intellects would lead the reader to review the roster of an intellectual club of which he and the writer might be members. I suggest that an interchange and filterings of facts, ideas, and values in such a club — the interplay of exposition, discussion, and criticism of, by, and for men who are specialists and experts — could actually be a model of the type of working forum that I visualize could be effective in untangling some of the educational snarls.

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SCIENTIFIC REBEL
(Continued from page 372)

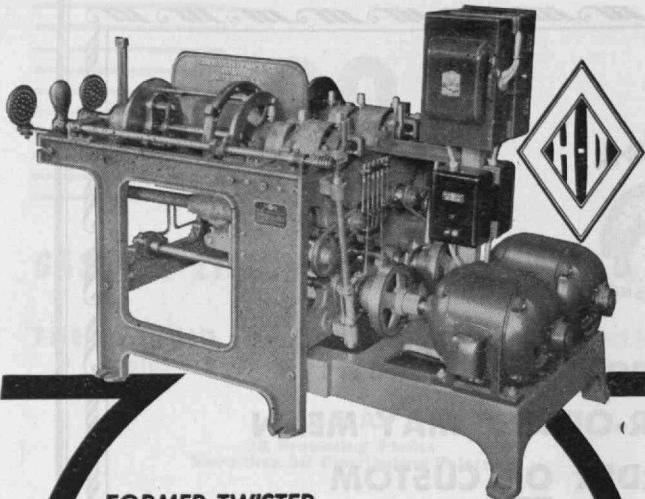
lead in the field. The first of these was the use of pivot-jewel bearings for the coil, as in a watch. The second was the use of helical bronze springs to conduct the current in and out of the coil, and to produce the restoring torque. These things worked so well that he was able to get a voltmeter on the market about 1887, which became a standard instrument everywhere, even in the shops attempting to make instruments which were competitive with his.

Weston was straightway confronted with a serious difficulty: even the best permanent magnets were not permanent. Their magnetism gradually decreased, thereby changing the calibration of the instrument. Putting everything else aside, he began a study of magnetism in steel. The solution eluded him for months: his associates tried to convince him that permanence in a magnet was impossible. But Weston merely growled his disbelief and drove his men on. At last a light dawned. He discovered that it was possible to age steel by a series of heat treatments and remagnetizations, until his magnets almost retained constant magnetism. Again, his men wanted to give up; again Weston went back over the problem, pondering the data they had given him. The real answer came to him at last.

A magnet, he realized, did not age perceptibly if its metallic circuit were kept closed; that is, if the path for the flux was unbroken. All experimenters had been using simple U-shaped magnets, with the coil between the arms. This interposed a large air gap in the circuit. Weston's idea now was to close the gap by fitting the poles with curved "shoes," and by furnishing the coil itself with an iron core. The ingenious trick was that the core did not move. It was fixed, forming a very thin annular space in which the coil could partially rotate. Thus he had contrived a virtually unbroken magnetic path. Here was, in basic design, the final principle on which direct-current instruments settled down. There has been no important change since. The first pioneer model was completed in December, 1886, and within a short time Weston was making instruments which showed no measurable change in calibration whatever.

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(Continued on page 406)



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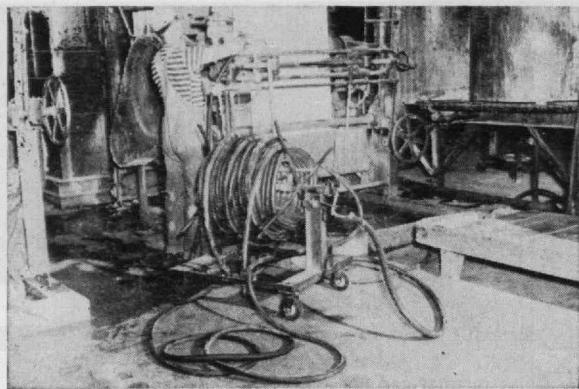
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SCIENTIFIC REBEL (Continued from page 404)

Weston now tackled the problem of measuring currents. Obviously the small moving coil could not carry large currents so he conceived the idea of the heavy shunt. Essentially the shunt was merely a heavy bar of high-resistance metal connected across the meter, carrying most of the current. The voltage drop across this bar was proportional to the current. Thus, when the fine wire coil was connected across the bar, it swung a pointer across a scale, indicating the voltage drop and hence the current in the bar itself. Results were beautiful. It was not long before Weston ammeters were offered, with capacities up to 100,000 amperes.

Once more he was beset by a serious difficulty. Under load, the shunt material heated up and its resistance changed, and with it, the instrument's calibration. For a time he tried to compensate for this with ingenious adjusting devices. But he knew well enough that there was only one real solution: a high-resistance metal which would not suffer a change in characteristics with rising temperature.

Search for New Alloys

The search for this hypothetical material — which the best scientific minds of the day claimed could not exist — was the longest that Weston ever made. It lasted over four years. Painfully, at first, he began experimenting with German silver alloys (copper, nickel, and zinc) and found them all to have excessive temperature coefficients. He then began altering the proportions, eliminating one ingredient and adding another. Soon he had an encouraging lead: the higher the nickel content, the higher the resistance, and the lower the temperature coefficient. Working with utmost intensity now, he and his entire shop force pitched in, compounding more than 300 alloys. The final result was a simple combination of nickel and copper — no zinc — which actually had a slight negative temperature reaction. Its resistance went down as it warmed up.

This did well enough for the early ammeters, and put Weston easily in the lead with them. But it did not satisfy him. As usual, he demanded perfection. Although the alloy was acclaimed in America, and in Europe as well, where it was named "constantan," Weston knew that he was still on the wrong track.

The rest of the battle was a matter of attrition. Gradually, he catalogued the influence of various metals upon the basic quality of temperature response, learning by carefully controlled tests what to expect from each slight variation in composition. At last he arrived at the successful result: an alloy still of copper and nickel, but with a certain addition of manganese. Long and careful trial showed the electrical resistance of the material did not vary measurably in the operating range desired.

The new alloy, patented in 1893 and called "manganin," was perhaps Weston's greatest single contribution to electrical engineering. It was surely his greatest personal triumph, for it had been achieved in

(Continued on page 408)



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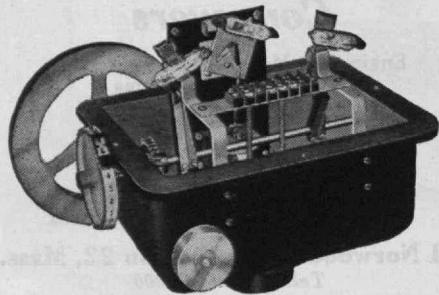
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SCIENTIFIC REBEL
(Continued from page 406)

the face of universal technical opinion that it was impossible. In a very short time it was accepted in all countries as the only solution to the shunt problem.

Weston did not dwell upon the glory that the invention had brought him in scientific circles. He was off again immediately into new territory — this time to solve the problem of alternating-current measurement in time to be in at the beginning of the meteoric rise of electric power based on the transformer. His next few years, then, were occupied in perfecting, altering, and refining the basic principles of measurement he had already established. Like his earlier instruments, the new ones led the field because, as one of his competitors said, "Weston knows how to do things well." He understood quality and was ready to charge twice as much as his competitors for his products, if he thought care in manufacture was essential to performance. Nobody ever quarreled with the price of a Weston instrument: they objected only to the difficulty of getting all they wanted of them.

The Standard Cell

Edward Weston was now rounding the 50-year mark and his major work — enough for any man, surely — had been done. He had devoted 30 years of intense and ceaseless effort to doing things better than anybody else. His final great contribution was perhaps the most delicately accurate one of all — the Weston standard cadmium cell for establishing the value of the volt. It was a far cry from the rough-and-tumble dynamo of plating days, and the embattled arc lighting system forced to success against the competition of the most brilliant young men of the Nineteenth Century. He loved the work on the standard cell because it took him back to boyhood days of electrochemistry. He loved it, too, because men who should know said it was impossible. Yet today the cadmium cell is the only one universally used. It is as obscure as the standard meter bar in Paris, but just as important to technicians who must set the criteria by which our world of electric power works.

When Weston found that the world had accepted his cell, he published a statement surrendering his patent rights completely. It was his gift to accuracy.

If Weston was tired as he entered the second half
(Concluded on page 410)



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SCIENTIFIC REBEL

(Concluded from page 408)

of his life, he showed it only in his change of emphasis from grueling original experiment to what he called pleasure. When the instrument company succeeded beyond all dreams, and his continued close guidance was no longer necessary, he decided to relax and to "play." Recreation for him was divided into two parts: His first form of fun was to take up and perfect, one after another, every kind of sport and hobby that he could possibly master. Billiards, golf, photography, trapshooting, horseback riding, yachting—he entered them all with the same fury for high excellence that had gone into more serious pursuits. He literally demolished every game that he could find, reducing both himself and his teachers to a state of exhaustion, then rushing on to the next. At some he genuinely shone: at others, he became a travesty. At none did he acquire even an approximate condition of ease and relaxation.

His second form of fun—and this really gave him the pleasure that hobbies failed to do—was to start suit against anybody and everybody who encroached upon his patents. Until long past 70, his stocky, quick-moving figure was known and loved and feared in every court in the East, where patents were under fire. He once took a railroad company to court for refusing to ship a fishing rod by express, and won a judgment of \$0.07 against the road.

Edward Weston was not as spectacular as Thomas A. Edison, nor as glamorous as Nikola Tesla, nor as world-shaking as Guglielmo Marconi. Yet when the accounts of the electrical age are cast up at some future time, in retrospect, his name will be written alongside the most famous of them, as the man who taught the beginners the importance of doing the best job it was possible to do. With such a philosophy Edward Weston was able to accomplish what haste and the drive for large profits could never achieve.

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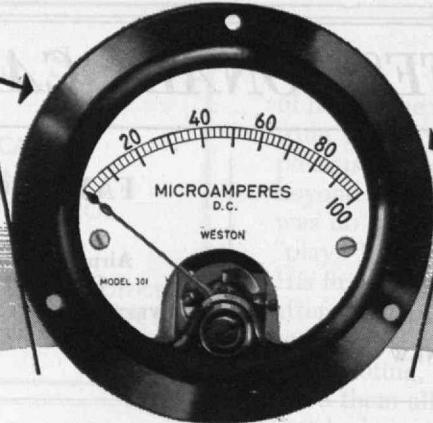
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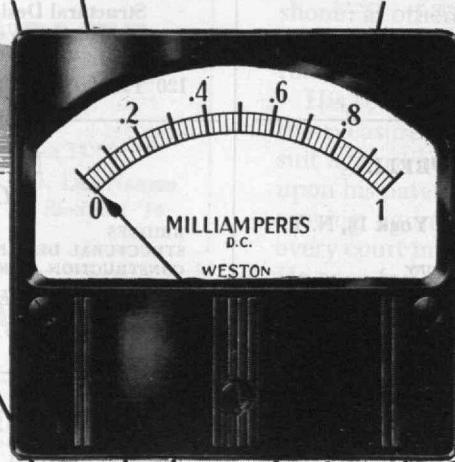
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News from the Clubs and Classes

CLUB NOTES

M.I.T. Boston Luncheon Club

The proximity of the Institute, and two major meetings each year (Alumni Day and the Midwinter Meeting) in Cambridge provide sufficient focus of M.I.T. activities to make a formal M.I.T. Club of Boston unnecessary. Nonetheless, an informal group was organized four years ago and Technology Alumni in Boston are invited to the noonday luncheon rendezvous on the second floor of Thompson's Spa, 239 Washington Street. On Thursdays, at two- or three-week intervals, a prominent local person gives a 15-minute talk on a topic of local or current interest at 12:45 p.m. The program is intentionally kept brief and as interesting as possible for busy M.I.T. Alumni in greater Boston.

On February 23, fourteen men attended the first of these meetings and heard an excellent informal talk on "Present Day Athletic Activities at M.I.T." by Ivan J. Geiger, Director of Athletics.—On March 9, Professor John B. Wilbur'26, Head of the Department of Civil and Sanitary Engineering, served in a similar capacity and spoke of the new Boston Central Artery Project which had recently been in the headlines. Those in attendance included: 1905: Babcock, Donald, Goldthwait, Shapira; 1906: Henderson; 1907: Gould; 1908: Beede; 1911: Yerance; 1918: Goss; 1920: Hennessy, Pope; 1925: Gregory; 1926: Cunningham, Dolben, Perry, Salmon, G. W. Smith, Taylor, Valentine; 1931: Ashenden; 1934: Dobbins; 1936: Robinson.

A series of similar meetings are being scheduled. All M.I.T. men are invited to join George Smith'26, Don Goss'18, Sam Shapira'05, Jeff Beede'08, Ed Delany'21 and others of the "old reliables" who have been making the M.I.T. Boston Luncheon Club a daily habit. Anytime from 12:00 noon to 12:45 p.m., you will probably find someone at the M.I.T. table, which will be pointed out to you by the hostess on the second floor.—FRED W. GOLDTHWAIT'05, *Secretary*, 274 Franklin Street, Boston 10, Mass. DONALD C. GOSS '18, *Treasurer*, 131 State Street, Boston, Mass.

The M.I.T. Club of Chicago

One hundred and twenty Alumni journeyed to North Chicago on February 20 to visit the plant of Abbott Laboratories. Those present were conducted through the Penicillin Plant and had the opportunity of hearing E. H. Volwiler speak. Dr. Volwiler is executive vice-president of Abbott Laboratories and president of the American Chemical Society. The members were unanimous in their expression

of the trip to Abbott Laboratories as being one of the most interesting and informative of recent meetings. Dinner was served at Abbott Laboratories. Other similar trips were planned for the spring.

Congratulations to our genial and hard-working Club Treasurer, John G. Praetz, on the announcement of his appointment as manager of the Product Service Division for Hotpoint, Inc. John will continue to make his headquarters in Chicago.—BENJAMIN H. SHERMAN'19, *Secretary*, The Firm of Charles W. Hills, 53 West Jackson Boulevard, Chicago 4, Ill.

M.I.T. Association of Cleveland

Our next meeting will feature the election of new officers for the period beginning with the 1950-1951 season. This is the year when every one of the officers will retire and a completely new slate will take over. Our Club has a new president each two years; and every three years, a new secretary and a new treasurer. We are sorry to see Bill Loesch'21 give up the gavel, as he has done a grand job. We expect the usual excellent job to be done by the nominating committee headed by Allen Gould'10. Allen has been a guiding figure in Cleveland alumni work for many years and has typified the untiring spirit that most of us respect.

On March 22, we held our early spring meeting preceded by a splendid cocktail hour and filet dinner. We had the very interesting experience of having as our guest of the evening, T. Keith Glennan, President of Case Institute of Technology. It was different to hear from the head of a rival engineering institution but that condition made it all the more significant to M.I.T. men. I suppose all college presidents are enthusiastic leaders but it seemed to many of us that Mr. Glennan is exceptionally inspired with the program that he has established at Case. Nevertheless, we did not feel the need to be concerned about the inroads that Case might make into the place that M.I.T. holds in education and research. Six Alumni who attended were also there as members of Mr. Glennan's staff. They were headed by Elmer Hutchisson'24, Dean of the Faculty of Case.

Those in attendance were: C. W. Brown'99, C. B. Rowley'12, E. H. Weil '13, W. J. Winninghoff'14, H. W. Ellis'16, E. N. Winslow'18, C. H. Reed'20, A. I. Bradley'21, J. W. Cartland'21, H. R. Hatch'21, W. G. Loesch'21, G. P. Schumacker, Jr.'22, B. B. Drisko'23, C. H. Hubbard'23, R. H. Smith'23, O. N. Stewart'23, C. E. Herrstrom'24, S. F. Stewart'24, D. E. Elmendorf'26, W. C. Sessions'26, E. E. Staples'26, H. P. Ferguson'27, Frank Massa'27, T. J. Ewald'29, A. G. Hertzmark'29, D. S. Connelly'31, B. W. Steverman'31, M. M. O'Brien'32, J. C. Rowe'32, J. A. Hayes'33, J. C. King'33, R. H. Valentine'33, G. E. Merryweather'34, Goodwin deRaismes'37, G. R. Young

'37, H. A. Zimmerman'37, J. P. AuWerter '38, F. W. Reuter, Jr.'38, M. G. Magnuson, Jr.'39, G. R. Mitchell, Jr.'39, W. K. Bodger'40, R. W. Cobean'40, E. O. Helland'40, J. B. Scalzi'40, L. D. Fykse'41, L. C. Turnock, Jr.'41, W. D. Bowman'44, R. H. Cavicchi'44, B. A. Lamberton'44, H. W. Mergler'45, P. S. Shane'46, W. H. Buckley'48, P. L. Nies'48, W. C. Caywood'49, J. L. Enos'49, R. L. King'49, K. A. Benjamin'50, V. R. Murphey, Jr., '50, and, as a guest of W. C. Sessions'26, E. M. Bosworth.—G. RICHARD YOUNG'37, *Secretary*, The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

The M.I.T. Club of the Kanawha Valley

Warren K. Lewis, Professor Emeritus of the Department of Chemical Engineering of M.I.T., was the guest of honor at a luncheon given by the Club on February 21 at the Greystone Restaurant in Charleston, W. Va. B. T. Woodruff'36, President of the Club, presided. At the luncheon, Dr. Lewis related a number of entertaining anecdotes and covered a broad range of subjects in answering questions about the present day doings and outlook of M.I.T. On the evening of February 21, Dr. Lewis addressed a dinner meeting of the Charleston section of the American Institute of Chemical Engineers on the subject of "Engineering as a Profession." The Charleston section of the American Institute of Chemical Engineers had extended an invitation to all members of the Club to attend their dinner meeting; hence, all Technology men had the opportunity to be with Dr. Lewis both at luncheon and at dinner. Eighteen M.I.T. men were privileged to entertain Dr. Lewis at luncheon and many more were able to be among the 200 who honored Dr. Lewis at dinner.

Those who attended the luncheon were: L. T. Bengtson'15, W. S. Brackett'23, G. B. Bradshaw, Jr.'40, R. M. Crawford'34, P. R. Des Jardins'38, R. G. Edmonds'34, C. H. Gilmour'31, Richard Gorman, Jr.'33, W. L. Hawes'22, C. F. Hobson'11, D. G. Hulett'42, R. L. Kelly, Jr., '42, R. W. King'42, M. F. Means'45, I. L. Murray'26, C. G. Neas'47, A. E. Winslow '47, B. T. Woodruff'36.—PAUL R. DES JARDINS'38, *Secretary*, Worthington Pump and Machinery Corporation, Post Office Box 281, Charleston 21, W. Va.

The M.I.T. Club of New York

New members continue to sign up in large numbers, due largely to the consistently good monthly programs and meetings of the Club. A bridge tournament in January promoted by Mike Radoslovich '26 and Dale Spoor'22 made a pleasant enjoyable evening for Allen Addicks'21, W. L. Chaffin'20, E. Wicks Eddy'26, Sax Fletcher'18, W. G. Franklin'43, B. V. Hetrich'43, Alton S. Heyser'26, E. Honigman '24, H. S. Kelly, Jr., '41, William G. Kuss-

maul, Jr.,'41, John W. Lake, Jr.,'48, Charles A. Lane'35, Alfred J. Oxenham '45, and Ralph C. Wilts'41.

In February, a dinner and evening meeting attended by well over 100 members covered a timely subject for water-hungry New Yorkers. Alan Bemis'30 came down from the Institute where he is director of Weather Research and gave a very entertaining talk on how radar and aircraft are used to forecast rain and storms. With no connection whatsoever, as far as we know, the city authorities four weeks later authorized rain-making experiments to help our critical water supply. Do we have a club member in the city government?

Wink Quarles'24 headed the Spring Smoker committee and ran one of the best evenings of the year on March 15. Wink offered a famous magician to mystify the 124 logical, analytical minds present and everyone was taken in. During the evening, two important guests, Dr. Karl Compton and Professor Hunsaker'12, in charge of the Department of Aeronautical Engineering, were called on for short speeches and loudly applauded.

Circle your calendar for Wednesday May 3 for another good evening. It's the annual dinner meeting and a big turnout is expected. — G. P. GRANT, Jr.,'35, Secretary, Grant Photo Products, Inc., 401 Broadway, New York, N. Y.

M.I.T. Club of Philadelphia

General George C. Kenney'11 and Dean John E. Burchard'23 will be the principal speakers at the Club's spring meeting on Tuesday, May 16, at the Barclay Hotel at 7:00 p.m. For the second time this year, it will be the Club's pleasure to extend a special invitation to the ladies to attend.

John Lawrence'32 recently was elected technical vice-president of SKF Industries, Inc. Mr. Lawrence is now in charge of the manufacturing, engineering, and research activities of his company. Lewis P. Tabor'22, senior research engineer in the Franklin Institute laboratories for research and development, recently became chairman of the institute's science and arts committee, which selects the institute's medalists.

The annual meeting was held at the Warwick Hotel on January 31. It was the most outstanding affair in the Club's history with Karl T. Compton, President James R. Killian, Jr.,'26, and Harold E. Stassen as guest speakers. Other honored guests were Donald P. Severance'38, Secretary-Treasurer of the Alumni Association, and A. Louis Bruneau, Jr.,'38, Treasurer of the M.I.T. Club of New York. A total of 200 members, wives, and guests were present to enjoy the speeches and the incomparable Warwick cuisine. The following officers and executive committee members were elected for 1950: Robert E. Worden'36, President; Henry W. Jones '26, First Vice-president; John Lawrence '32, Second Vice-president; Pierre S. du Pont, 3d, '33, Third Vice-president; Samuel K. McCauley'41, Secretary; Wiley F. Corl, Jr.,'39 and Proctor Wetherill'34, Assistant Secretaries; Frank S. Chaplin'32, Treasurer; William H. Bertolet, 3d, '48, Assistant Treasurer; Hiram L. Walker'05,

C. Willis Stose'22, Kenneth S. Lord'26, Karl E. W. Hellsen'32, Robert C. Eddy'38, Joseph K. Knight'40, and Robert A. Lombard'47, Executive Committee. The officers and executive committee held their first meeting on March 13 at the Warwick.

It is with regret that we learned of the passing of two members, Benjamin Adams '95 and William W. Eaton'97. Mr. Adams, prior to his retirement, was district manager of the American Blower Corporation. Mr. Eaton at the time of his death was still actively engaged in engineering work with the Lanston Monotype Machine Company. The Club extends its sincere sympathy to the families of Mr. Adams and Mr. Eaton.

For information about Alumni in the Philadelphia-Wilmington area, telephone Boulevard 0287. — SAMUEL K. McCUALEY'41, Secretary, 288 Copley Road, Upper Darby, Pa. Assistant Secretaries: WILEY F. CORL, JR.,'39, Box 532, Bryn Mawr, Pa.; PROCTOR WETHERILL'34, Rural Delivery, Chester Springs, Pa.

M.I.T. Club of Schenectady

The monthly luncheon meeting was held on February 21 in the Zonta Room of the Young Women's Christian Association. Joseph Rotundo, a professor at Union College, spoke to the group on "Issues Behind the Coal Strike." Professor Rotundo traced union activities in the coal industry from the turn of the century to the present time. A discussion period followed during which many of the issues at stake were discussed.

Those present were: V. Y. Dunbar'16, E. H. Bancker'18, T. R. Rhea'24, B. S. Weaver'25, J. B. McClure'27, G. T. Bevan '31, W. O. Bachli'33, C. F. Barrett, Jr.,'34, J. H. Burnham'34, Harold Chestnut'39, P. G. Cushman'41, G. M. Ketchum'41, R. W. Stanhouse'41, J. T. Coe'42, W. B. Rodeman'44, D. P. Strang'45, J. G. Holmes'47, E. S. Lawrence'47, G. H. Oliver, Jr.,'47, J. F. Robertson, Jr.,'47, A. M. Varner'47, Francis Brown, Jr.,'48, and G. Root.—WILL B. RODEMAN'44, Secretary, General Electric Company, Building 81, Schenectady, N.Y.

M.I.T. Club of South Texas

Scintillating southern hospitality was at its peak in the Oil Capital of the World on the occasion of the Financing Development Program banquet in the Houston Club on the evening of February 23, attended by Alumni and their wives and their guests. Many of Texas' most prominent business, educational and social leaders were among those present to enjoy this altogether delightful evening, the largest and most important of any of the functions ever to take place in Texas under the sponsorship of the M.I.T. Alumni. All details and planning of this most successful banquet were under the capable management of Richard T. Lyons'17, Vice-president in charge of production of the Tide Water Associated Oil Company and Cochairman of the C.F.D. for the South Texas area, who arose and spoke words of welcome and greeting to the guests and Alumni assembled on this occasion. He then introduced Hines H.

Baker, President of the Humble Oil and Refining Company. Mr. Baker, in his very excellent manner of speaking, kept the interest of all those present focused on his words as he described a series of highly interesting, firsthand experiences together with observations he made from time to time during his many years' association in the petroleum industry. He frequently interspersed his appropriate and fascinating remarks with humorous sidelights and levity, all to the delight of an appreciative audience. Then, after referring to a long and pleasant acquaintance with him, he presented Warren K. Lewis'05, Professor Emeritus of Chemical Engineering at M.I.T. Everyone arose with prolonged applause in full appreciation of the splendid introduction just delivered by Mr. Baker and, simultaneously, in greeting Dr. Lewis, who had come to address this and other alumni meetings in Texas.

Dr. Lewis described to us within the hour many of the details of his analyses from various points of perspective of some phases of educational problems in general and in their broader aspects as related to sociological problems; mentioning some of the factual bases upon which the matters must stand, using for purposes of clarity and illustration round-number values of established data, making reference to progress factors and progress indicators as well as to comparative output ratios established over the years in the petroleum refining and other process industries, in energy-conversion operations, and in the improved capacity of machine tools today as compared to that of only a few years ago. All of these increased ratios are undisputed technological advances accomplished under our great system of free enterprise which have resulted in providing a higher standard of living for the people of the United States of America than for any other nation on the face of the earth since recorded history was first begun. He summed up in conclusion by saying that if the progress we have already made, as well as that to come, is to be preserved and continued or increased, this can best be done by aiding the educational institutions generously and in such a positive manner as to enable them to be very soon provided with the physical equipment urgently required now for advanced students and research scientists in the technological fields; further saying that he knows of no program more worthy of immediate support than the M.I.T. Development Program.

We were honored to have as one of our guests on this occasion the widow of the late Harry Carrothers Weiss, who was one of Houston's most beloved and distinguished men. He was one of the founders of the Humble Oil and Refining Company; president of the company from 1937 to 1948 when he was named chairman of the board; and a special term member of the M.I.T. Corporation. — A Kodachrome film of scenes at the Institute in Cambridge was shown following Dr. Lewis' address, the projector and services of its operator having been kindly made available to us with the compliments of the Humble Oil and Refining Company. Our sincere thanks are extended to them for their kindness.

A fine time was had by all who were present at the largest and most successful M.I.T. alumni meeting ever to be held here. — JOSEPH H. McEVY'21, *Secretary*, 202 McGowen Avenue, Houston 6, Texas.

M.I.T. Club of Southern California

Treasurer George Cunningham'27 had charge of the 4th annual food fair and the all-day conference of the Food Technology Group of Southern California held in Los Angeles. President of our Club, Phil K. Bates'24, is also secretary of the National Association and will be in charge of the national convention to be held in Los Angeles in 1954. For the past two years, Cunningham has been the producer of the television show "Chemists in Action" over KTLA, Channel 5, on the first Sunday of each month at 10:00 P.M.

On March 7, the following interested Alumni under the leadership of President Bates'24 discussed the general affairs of the Club at a luncheon at the Redwood Room in the Savoy: Collier'18, Row'23, Welles'15, Stanley'44, Golsan'34, Cunningham'27, Powers'26, Beebe'10, Navas'32, Stringfield'15, and Sammis'28 was represented by Johnson of Northwestern. The united opinion was in favor of more social meetings — trips to plants being preferred. Powers'26 agreed to contact Livadary'22 and Chilcott'21 regarding a tour of a motion picture studio; with dinner, if possible, on the location — similar to a trip taken approximately in 1939 and sponsored by Stewart'23. This meeting brought out the largest attendance of Alumni, with the exception of the January, 1950, banquet for President Killian'26. Row'23 volunteered to make arrangements for similar tours through Alcoa and Fontana Steel.

Page Golsan, Jr.,'34 was unanimously selected for chairman of the 1950 directory committee with George Cunningham'27 in charge of advertising. All present volunteered to meet at any time selected by Chairman Golsan to start work. This 1950 directory will be much easier to compile as the Development Committee have kindly given their late revisions of the addresses, both personal and business, and telephone numbers of all Alumni contacted and reporting, to Secretary Beebe'10. The most excellent typographical form chosen by the late Kenneth Kahn'15, chairman of the 1946 directory, can also be adapted, reducing production time by 50 per cent.

Row'23 was the moving spirit in the calling of this luncheon as per his speech at the closing meeting of the Development Committee in the Galeria Room of the Biltmore; and it was the unanimous opinion of all present that the Development Committee organization be encouraged and used for personal contact by telephone regarding meetings, the directory, and any other matters for action. Row agreed to contact the division chairman, Kingsley'23, Parker'06, Thacher'42 and Crowell'15. Collier'18, cochairman with Crowell, stated that he would be glad to contact the five captains under him urging them to ask the four to six workers each under the respective captains to notify those whom they contacted

during the Development campaign and with whom they became acquainted. This chain reaction would personally reach approximately 600 Alumni. Collier'18 also offered the use of a telephone and a desk, when needed for the use of Cunningham'27 and others in promoting the activities of the Club, at his office: Room 444, Petroleum Building, at Olympic and Flower streets. If four other Alumni would furnish similar facilities at times, the work of the Club would be greatly expedited. Navas'32 and Stanley'44 were also selected to assist Row'23 and Collier'18 in keeping the Development Committee organization as Minute Men for notifications.

Stringfield'15 reported many inquiries for placements with good results and asked for a committee of Alumni from the eight divisions of business activities in this area, similar to the Chicago plan. President Bates'24 reported that he had already secured Kingsley'21 in the mechanical field and that he hoped others would accept. Collier'18 agreed to assist in this important work. — Bimonthly luncheons were suggested at some place where the Alumni could stay and visit. Secretary Beebe'10 agreed to check on costs, availability and accessibility and make a trial run. The meeting adjourned with many expressions of appreciation for the fellowship and the progress made in organizing a more active club with more Alumni participating in the activities.

Several Alumni are planning to attend Alumni Day in Cambridge on June 12. — Alumni have spoken of chance meetings with others by noticing the Beaver class rings. Secretary Beebe has received the official price list and descriptions and will be glad to hear from any wives who wish to order rings as gifts for their husbands. — Postal'25 suggests a news bulletin with Hakala'35 as editor; and if there is a demand for this, it will go only to those desiring it. A general mailing to the 1,200 Alumni would be too great a burden on the project. Comments on this, with suggested personal items may be sent immediately to the undersigned. — HIRAM E. BEEBE'10, *Secretary*, 1847 North Wilcox Avenue, Hollywood 28, Calif. Telephone, Granite 9572.

Washington Society of the M.I.T.

At the last meeting of the Society, held as usual on the second Thursday of the month at the Willard Hotel, we were fortunate in having Senator Saltonstall as our speaker. His talk was concerned with the problems confronting senators. He introduced his talk by reading amusing letters constituents had sent to him. The first writer wanted to know from what government agency she could borrow money with no interest. With the money, she intended, quite patriotically, to buy government bonds and then with the interest from the bonds she would be in a position to pay her income tax.

The two major problems confronting Congress are those of national security and public welfare. Senator Saltonstall discussed in some detail the problems that arise in maintaining security. Because of his active membership on the Senate Armed Forces Committee, he was able to give us an exceptionally clear and impres-

sive picture of the current thinking on this problem. Common to all problems facing Congress is, of course, the question of the budget. The Senator firmly believes that the budget should be balanced. He pointed out that today 71 per cent of the national budget is allocated for war expenditures, past, future and current, and 29 per cent is for public welfare. In 1939, these percentages were reversed. We all appreciated the splendid talk Senator Saltonstall gave us and hope we will be able to hear him again.

The following attended the meeting: C. G. Abbot'94, G. L. Arnold'30, B. S. Atkins'15, E. S. Bates'24, A. D. Beidelman'15, A. E. Beitzell'28, S. J. Cole'26, F. H. Copeland'18, J. G. Crane'90, J. M. Culverwell'33, R. W. Cushing'11, P. L. Dougherty'97, L. K. Downing'23, B. P. Du Bois'92, T. T. Fell'49, E. W. Glen'29, W. A. Gray'33, A. S. Heyser'26, A. M. Holcombe'04, G. R. Hopkins'22, W. K. Johnson'27, T. C. Lu'44, D. A. Lundquist'19, H. W. Mahr'07, H. D. Manuelian'18, F. W. Milliken'04, D. K. Morgan'32, H. C. Morris'00, E. L. Morse'22, N. C. Nelson'30, Alan Osbourne'21, I. R. Paris'14, W. G. Peck'40, A. M. Pedersen'12, A. J. Perry'29, E. R. Pettebone'36, J. A. Plugge'29, F. S. Pohanka, Jr.,'44, H. W. Poole'30, A. J. Reardon'27, J. W. Sheetz'42, C. C. Smith'28, M. P. Smith'19, M. O. Soroka'26, J. H. Sprague, Jr.,'43, N. P. Stathis'29, G. W. Stone'89, H. H. Thompson'13, F. P. Upton'16, H. F. Ware'25, and W. E. Wentworth'16. — JOHN ADE PLUGGE'29, *Secretary*, 35 Oxford Street, Chevy Chase 15, Md. ALBERT F. BIRD'30, *Review Secretary*, 5070 Temple Hills Road S.E., Washington 20, D.C. JOHN W. SHEETZ'42, *Assistant Review Secretary*, 3068 South Woodrow Street, Fairlington, Arlington, Va.

The M.I.T. Club of Western Pennsylvania

The Club held its regular monthly meeting at the University Club in Pittsburgh on February 16. After a pleasant hour of informal conversation and the stein, dinner was served at 7:00 P.M. At 8:00 P.M., the meeting was called to order by our President, George Hoffman'28. The minutes of the previous meeting were read by our Vice-president and Weatherman, Henry Rockwood'32. The Treasurer's report was read and approved. The indications are that the receipts will just about balance the expenses this year. Information about the next meeting was given by our Entertainment Chairman, Rusty Toolin'39.

Theodore Miller of the Westinghouse Research Laboratories, television section, was the guest speaker of the evening. His subject was color television. He gave the history of television and commented on the Federal Communications Commission's regulation of television expansion. Mr. Miller briefly outlined the operating theory for black and white television, then discussed the three methods that are used at present for the transmission of color and outlined the advantages and disadvantages of each. These methods were illustrated by slides. The F.C.C. requirements for an acceptable system of color television were outlined. All of those present

found the talk very informative and many of our questions regarding the conversion of present black and white television sets and the future of color transmission were answered.

The following members were present: M. A. Akel'46, C. T. Barker'27, W. J. Bates'35, W. U. C. Baton'04, E. L. Chappell'24, I. M. Cramer'47, W. M. Davidson'26, D. B. Demond'18, D. W. Dimock'28, V. J. Dobert'36, G. M. Frank'23, J. A. Gibson'26, M. M. Greer'26, H. H. Hall'14, G. M. Hoffman'28, Herbert Kay'47, H. D. Lawton'47, H. A. Leone, Jr., '48, W. F. Limbach'45, I. E. Madsen'33, R. F. Miller'34, J. W. Morris'45, G. C. Morissette'35, C. F. Peck, Jr., '41, A. K. Redcay'34, A. S. Roberts'39, Henry Rockwood'32, W. F. Schaefer'48, L. D. Schmidt'23, C. B. Seibert'32, P. R. Toolin'39. — **GEORGE C. MORRISSETTE**'35, *Secretary*, 469 Mapleton Avenue, Mt. Lebanon, Pittsburgh 28, Pa.

CLASS NOTES

• 1886 •

The Secretary of '86 M.I.T. Alumni reports as follows: The first \$1 assessment (1947-1948) produced \$22; the second one (1949) produced \$15. Eight members contributed \$14 additional, and five members have contributed \$0! Total receipts \$51. Disbursements for postage, stationery, mimeographing, travel, council meetings to March 20, 1950, \$42.19. Balance, \$8.81. Five members owe \$2 each, and five owe \$1 each to equal what the rest of the Class have done in the way of assessments. After the next council meeting, the Secretary will need a magnifying glass to find the balance on hand; and, therefore, we shall need the \$15 unpaid to avoid assessment Number 3. If any member is in doubt as to his standing, drop a post card to the Secretary.

The Class has lost two members by death during 1949, Herrick and Howe. — **ARTHUR T. CHASE**, *Secretary*, Post Office Box 4, Island Creek, Mass.

• 1888 •

The spring flower show of the Massachusetts Horticultural Society, in all its splendor, was in full swing at the time these notes were written and Ned Webster's orchids were one of the outstanding exhibits. This display was awarded a Gold Medal for the 20th consecutive year. — Your Secretary will appreciate any items of personal news that members of the Class may feel moved to send him. — **JOHN C. RUNKLE**, *Secretary*, in care of Edwin S. Webster, 49 Federal Street, Boston 7, Mass.

• 1890 •

Preliminary notices of our 60th anniversary brought news of the loss of three members: Crossman, Page, and Warren. Fred A. Crossman died at his summer residence in Kingfield, Maine, on September 21, 1949. Born in Providence, he transferred from M.I.T. to the Cornell Engineering School from which he graduated.

According to a Franklin County, Maine, paper, he went to Kingfield on a fishing trip as early as 1886, liked the region and decided to settle there. "He went into the lumber business in Maine and had extensive lumbering connections in New Brunswick." Later he established his winter residence at Lexington, Ky., where he was a member of the board of directors of several coal companies. Widely traveled and very observant, he was a polished conversationalist. He is survived by his wife, a son, and a daughter, to whom the Class extends its sympathy.

From the Morristown, N.J., Trust Company comes the following: "Albion L. Page passed away April 16, 1949, at his home, 123 Madison Avenue, Madison, New Jersey. He was President of the Vapo-Cresolene Company from his father's death in 1892 and was still active up to the time of his death." — Lyman O. Warren, a member of an old Boston family, who died in March, 1949, had been in poor health for many years, "in spite of which," writes his wife, "he enjoyed living and he certainly made it pleasant for people to live with him." Clearly enough, Warren had successfully solved the problem of why some of us are continuing here when we can no longer be active in professional work.

Harold B. Roberts has left New Jersey and is living at 3490 Via Guadalupe, Tucson, Ariz. He writes: "The effervescent spirit of health still abides within me, and I don't mean 'hot air.' I shall not be able to join my classmates on the momentous 60th. Give them a hearty handshake at any rate, and wish them for me a healthy and healthy remainder of this life." Thomas Codman sends regrets that he cannot attend the 60th, as he is to be in France. Two members of the Class, L. B. Holmes and Arthur Ropes, write of being in the hospital last year, and Bartlett is reported as having broken a wrist. We wish them complete recovery. The day Packard got back to Longwood, Fla., from calling on Flint in St. Petersburg, word came from Bertram Davis that he had a winter apartment at 1908 9th Avenue, North, in the same city. — **GEORGE A. PACKARD**, *Secretary*, 53 State Street Boston 9, Mass. **CHARLES W. SHERMAN**, *Assistant Secretary*, 16 Myrtle Street, Belmont 78, Mass.

• 1891 •

Another of our classmates, Francis C. Holmes, has just passed on to his reward. The Plymouth, Mass., *Old Colony Memorial* of March 16, published the following brief outline of his very useful and distinguished life. "Francis C. Holmes of 264 Court Street, this town, honorary vice-president of the Plymouth Cordage Company with which firm he had been associated for 56 years, died Sunday night at the Phillips House in Boston following an illness of two weeks. Mr. Holmes entered the employ of the Cordage Company in 1894 and served successfully as treasurer, general manager, director, consultant vice-president. He was born in Plymouth, a son of Gideon Francis and Helen Augustus (Drew) Holmes and was educated in the Plymouth Public Schools.

"He married Mary Valesta Bennett

June 21, 1900 and they had one daughter, Valesta Louise (Mrs. Vernon Hawkins, Jr.) He entered M.I.T. Class '91 and always considered that as his class, although sickness kept him at home one year, and he was graduated from M.I.T. in 1892. He was a vice-president and trustee of the Plymouth Savings Bank, a director of the Plymouth National Bank and the Plymouth Boys' Club and a member of the town Planning Board. In 1934 he was appointed a member of the Code Authority for the cordage and twine industry, the appointment being made in Washington and in 1936 he was chosen by ex-Governor James M. Curley to meet with 100 other prominent Massachusetts residents in formulating a State-wide job finding program. Mr. Holmes has always taken an interest in town affairs and had been most liberal in his support to the Jordan Hospital and other public charities. In 1935, Mr. Holmes made a gift of an oxygen tent to the hospital and a year later donated a radiographic and fluoroscopic tilt table to the surgical room at the hospital. His most noticeable gift, however, is that of the new wing at the hospital. . . ." Our President, Harry Young, sent flowers in the name of our Class.

It is interesting to note that Gorham Dana has just been re-elected for the 10th time, embracing 20 years of service as chairman of the Brookline Planning Board. — **FRANK W. HOWARD**, *Secretary*, Bemis Associates, Inc., Post Office Box 147, Watertown 72, Mass.

• 1893 •

The 57th anniversary meeting of the Class will be held on Monday, June 12, 1950, at the Engineers Club, 96 Beacon Street, Boston, at 12:30 P.M. Luncheon will be served promptly at one o'clock, giving ample time to attend the Alumni Day exercises at the Institute and the dinner which is scheduled for 7:00 P.M. at the Copley Plaza Hotel in Boston. Individual notices regarding this meeting will be mailed to members of the Class at a later date. — **LEONARD B. BUCHANAN**, **JESSE B. BAXTER**, **HERBERT N. DAWES**, **GEORGE B. GLIDDEN**, **FREDERIC H. KEYES**, **CHARLES M. SPOFFORD**, *Chairman*.

• 1894 •

The Secretary is back at his desk after attending a fine meeting of the Refrigeration Research Foundation in Chicago at the end of January and then taking a hasty trip to California. At the Chicago meeting, he was for the 7th time elected chairman of the Board of Governors, as one of the Board representing the public interest in the great refrigeration industry. The Foundation itself is sponsored and supported by forward-looking companies that believe in research in industry. A Science Advisory Council of well-known engineers and food technologists advises on all the research projects that the Foundation establishes.

Following this meeting, the Secretary took his spouse to California to give her a two-months' change of scene and improvement in physical condition. This was the Secretary's 5th annual winter trip combining business and pleasure. On the latter, foregathering again with Austin

Sperry, Jack Nowell and Arthur Fowle '93, was an outstanding event, with luncheon as usual at the Bohemian Club, of which Sperry and Fowle are enthusiastic members. This is the third time the four have met in this delightful manner, and as previously, scenes of the old days were reviewed ad lib. Through Sperry, it was learned that Clive Davies had been in America again en route to or from Honolulu but did not visit Boston. Nowell reported that his wife's health, which had not permitted a Boston visit last summer, is now much improved. Fowle was glad to receive news of Keyes, an old friend as well as classmate, who shares Room 5-213 with the Secretary, and of Spofford and other '93 men. A most enjoyable evening was also spent with Sperry and his charming wife at their home in Berkeley. Both in the Los Angeles district and the Bay area, the Secretary received many kindnesses from good friends and former students.

After four busy weeks in California, the Secretary left Oakland by the scenic and excellently run Western Pacific Railroad. The trip through the Feather River Canyon in full daylight and then on from Salt Lake City (via the Moffat Tunnel) to Denver was most enjoyable. Having now sampled all the transcontinental lines, this latest trip stands out as perhaps the most scenic, and it certainly is a grand way to cross the Sierras and the Rockies.

Since arriving home (in one of the coldest periods of the winter) the Secretary has not collected many news items. A new report from Abbot on long-range weather forecasts awaited his reading. George Owen faithfully represents '94 on the Alumni Council. Claflin still sells chemicals and philosophizes. Bean is Manchester's busiest banker. A notice informs us that Richard G. Dukes, for a time a student in Course IX along with Billy King, is now living at 2 Stadium Road, West Lafayette, Ind. He was for years, and may still be, a professor at Purdue.

Our numbers are again reduced by the deaths of Frank Drake, long a consulting mining engineer in San Francisco, who died on January 14, and that of Daniel W. Richards at Salem, Va., on November 8, 1947, but not previously reported. For many years, Richards was connected with the Norfolk and Western Railroad at Roanoke, Va., but retired about the time he came to our 50th reunion. His demise will cause sorrow to all who knew him back in the nineties.

It is hoped that all who read these notes will send in some news of themselves.—SAMUEL C. PRESCOTT, Secretary, Room 5-213, M.I.T., Cambridge 39, Mass.

• 1895 •

We are indebted to our mutual friend Dennie, M.I.T.'11, for the clipping from the New York *Herald-Tribune* relating to the will of our late Arthur D. Dean, which provides aid to college students: "Deserving students at Wellesley College and . . . Technology will share equally in nearly \$180,000 during the next ten years, under provisions of the will of Arthur Davis Dean, of near-by Brookfield, who died November 19, 1949. The bequests

must be spent within ten years after Mr. Dean's death and no part is to be used for tuition, salaries of faculty or employees, equipment or buildings. M.I.T. receiving one-half of the estate, is directed to establish the Arthur Dean fund to be expended under the direction of the president of the institute for any purpose which will directly aid worthy students in pursuing their courses of instruction. Three-eighths of the estate go to the Wellesley Students Aid Society, Inc., to be apportioned by the board of directors to aid worthy students. This fund is to be known as the R. Elizabeth Sherman fund in memory of Mr. Dean's wife, a Wellesley alumna, who died in 1948. The remaining one-eighth goes to Wellesley College directly for the establishment of an Amy Chattel fund to be expended under the direction of the president to directly aid individual students majoring in physical education. Mr. Dean, chief of the division of vocational schools in New York State's Education Department from 1908 to 1917, was a professor of vocational education at Columbia University from 1917 to 1928."

Robert Wesselhoeft Swift, II, passed away on March 9 at his home in Milton, Mass. Bob graduated from the Milton Academy and then entered Technology. After leaving the Institute, he obtained a practical knowledge of business by being associated with the Hathaway Mills Corporation, and the Acushnet Mills Corporation and serving in all the capacities from picker hand to the final booking department. Following this, he was interested in the American Moistening Company, Boston, which took him over the United States and Canada in the capacity of sales manager. About 1901, he joined the Lansdowne Monotype Machine Company, of Philadelphia, Pa., in developing new uses for automatic typesetting and typemaking machines. In 1915, he was made assistant treasurer of the Solway Process Company, of Syracuse, N.Y., and later assisted in the study of the chemical industry which lead to the combining of five companies into the Allied Chemical and Dye Corporation. He finally located in the east; and in 1926, he organized the importing firm of Swift and Anderson, Inc., which worked with leading optical manufacturers of France and Germany. When World War II interrupted trade with Europe, he bought out Standard Thermometer, Inc., of Boston, makers of weather and optical instruments. During his day, he was an ardent sportsman enjoying sailing, shooting, fishing and skiing. He was also active in his class affairs and was a member of the Delta Psi Fraternity and numerous clubs.

Gerard H. Matthes, formerly of Vicksburg, Miss., now of New York (retired) has won the oldest and most notable award in the American Society of Civil Engineers. "The award of the Norman Medal to Gerard H. Matthes, former director of the Waterways Experiment Station (Vicksburg) and for many years with the Corps of Engineers, was announced in the current issue of *Engineering News*." Gerard is now a distinguished consultant in New York. "In the private field of engineering, he has won acclaim for his work on projects in this country and abroad. A

native of Holland, he derived his engineering foundation in a land where flood control and drainage are vital to life and economy of millions. He studied in Dutch, Swiss, and German schools, completing his education at Technology, when he came to America in 1891." Gerard received a civil service appointment in 1897, and since that time he has been affiliated with most of the major engineering agencies of the United States. He saw service in the United States Geological Survey, the Reclamation Service, several water power companies and the Corps of Engineers. During his engineering work, he devised a technique which opened the way for accurate aerial surveys. Matthes did pioneering work on river cutoffs as a method of reducing floods, and the paper that won him the Norman Medal was based on this feat of engineering. He was assigned to the Mississippi River Commission in 1932; going to the experiment station, he was director 10 years later. For his wartime service, he was awarded the Exceptional Civilian Service Medal. Gerard writes that he is enjoying much his supposedly retired status, in that he can care for just whatever work he wishes to assume. Recently, he was down in Mexico as consultant to the Department of Hydraulic Resources, for two years, in connection with river development for flood control and navigation. They enjoyed flying both ways, and in particular enjoyed the wonderful climate there. The climate beats Florida a mile (nearly a mile and a half, Mexico City is at an elevation of 7,300 feet).

Willard H. Watkins, V, who was located in Bound Brook, N.J., for a number of years, has now taken residence at 87 Poplar Street, Roslindale 31, Mass.

Benjamin Adams, VI, of Philadelphia, Pa., passed away on March 3 in the Presbyterian Hospital. Following graduation he had a job as inspector for the American Telephone and Telegraph Company at New York and later was transferred to Philadelphia. In November, 1900, he went with the American Blower Company at headquarters in Detroit, and a year later returned to Philadelphia as district manager, which he held throughout his business career. He became the leading authority in this business in eastern Pennsylvania. He covered the territory of the eastern half of Pennsylvania, southern half of New Jersey, all of Delaware, and three counties in Maryland, including Baltimore City. His principal amusements included outdoor study of birds and flowers. He was a motor boat enthusiast, was a former commodore of the Barnegat Bay Racing Association, and the Island Heights (N.J.) Yacht Club. He held membership in Sons of Revolution, the Military Order of the Loyal Legion, and the Union League Club. A daughter and a sister survive him.

June, 1950, will be the time for a 55th reunion of our Class. The "grim reaper" has taken nearly all of the mates who were always interested in getting together, and who always came to our 5-year reunions. In the past, we planned our meetings at some place in or near Boston, so those who came to our reunions could conveniently attend the Technology festivities. A survey of the possible number of the members of our Class attending such a 55th

reunion, precludes any extensive plans for a get-together. For this reason, it is suggested that the '95 Alumni meet at the regular luncheon at M.I.T. on Alumni Day. Official notice will be mailed to all mates. Our present roster covers 98 names, distributed over 23 states. While 29 are listed for Massachusetts, a possible half-dozen would attend such a meeting. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

At the New York dinner on February 17, the roll call indicated that a thumbnail sketch of the various activities of those present would be interesting to the readers of our notes. John Tilley has been warned by his physician and friend that his waist line must come down; and though mentally active, he should begin to cut his professional duties. He was the same John we all know and love so well, and when he engineers a class dinner, even for a relatively few, it is engineered. Lawrence Sager is making satisfactory progress in his arthritic problem and is even more occupied professionally than for some years. He is an excellent understudy to John T., and when we add Bakenhush to this duo, it is unquestionably a great combination for productive, progressive thought.

R. Bakenhush: Our evening romancing brought out some of the episodes of our undergraduate days, and the following description of our first freshman meeting will recall to all of us memories of a past generation, full of the spirit and understanding of that day: "I well remember when we had our first '96 class meeting in Huntington Hall. Of course, we as freshmen did not know all of our classmates nor did we know the sophomores. A great many of the sophomores barged into the meeting. Finally, we caught on and a number of our boys were stationed at the entrance door. It was not long before there was a struggling mob of freshmen and sophomores at the door. Then, suddenly, someone came along and pulled the boys right and left and fought his way through. That was none other than our President, Francis Amasa Walker, himself. He fought his way in and mounted the platform. He talked to the assemblage and said this was a meeting of the freshman class and he asked all those in the room who were not freshmen to leave like gentlemen. Quite a number of the boys got up and in a very sheepish way left the room. We freshmen who were left had developed respect and affection for President Walker." A personal comment on Reub might be chronological at this time; namely, he has given up fencing, reluctantly but wisely.

Gaylord Hall is still very proud that though approaching 80, he is still being considered as a young man in the early 70's. Trout was very much alive to his professional opportunities and looked the picture of health. Dorrance rides back and forth on the New Haven with the greatest of ease and looks wonderfully well. I can happily report Fred Damon and myself in excellent condition and active in our chosen fields, but we are definitely taking things a bit more easy.

A long, newsy letter was received from

Conrad Young on March 14 from his winter home in Fort Myer, Fla. He says: "I feel better and stronger than I have these many years." He seems to have a very good doctor who feeds him a special brand of vitamins. He almost lost his singing voice after a spell of virus x but the tones came back in fine quality. — A letter was also received from Henry K. Sears, Wichita, Kansas: "The past week has been an eventful one for me. A new president, Harry F. Corbin, was inaugurated on March 9 with proper ceremonies at Wichita University. One hundred and fifty-nine delegates from leading colleges joined the academic procession. This semester I will have finished 52 years of teaching with but one year out." — The Reverend Partridge is still at the Storrow House; just about the same as at our last report. — Myron Pierce writes: "Mrs. Pierce and I were very much disappointed not to be at the Development Program dinner at the Copley Plaza on March 8, especially as we have been staying there this winter. We both failed to recover in time from the very bad virus colds which we contracted some weeks ago. We are trying to get away to Nassau and have our reservations on the plane for Miami on the 20th." Hedge, Fred Damon and John Rockwell attended the Development Program dinner. You can't keep a great institution down. Let's all get back of this magnificent opportunity to help M.I.T.

In a letter to the Secretary, Joe Harrington says: "I wanted very much to see you during the Christmas holidays when Mrs. H. and I visited our son Joseph, Jr., (M.I.T., '30; Sc.D., '32) but I couldn't work it in. So, I thought you might like to see something of what I have been doing the past few (?) years. I am still intensely active, not only as research engineer for a string of coal-producing companies, but developing a residential-size stoker and boiler that is proving to be very efficient. Am also doing a lot of public speaking on air pollution. Was very active during the War in coal conservation for the War Department and Bureau of Mines. Blood pressure 140/80; three square meals; nine hours sleep; clear conscience; enjoying life; 72 next April — you might prescribe that for some of your patients." Space does not permit including his distinguished citation and biography. It's a great thrill for all of us to give our Phi Beta Kappas to our illustrious classmates.

We have a change of address for Edward A. Eames who is now at 155 Bryant Street, Buffalo, N.Y. — Regrettably, we report the death of Willard H. Colman, Post Office Box 247, Hopewell, N.J., on September 3, 1949. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, 275 Broadway, Arlington 74, Mass.

• 1898 •

Mabel F. Lambert has kindly sent us information about her husband and family. She writes, in part: "It was ever so kind of you to send me the Christmas greeting and I thank you. John would have loved the picture of Marblehead harbor as he and his brother, Fred, had a knockabout and used to sail in the races for that class of the Eastern Yacht Club in

the old days. I do not know just what you wish. So, I am condensing a Lowell newspaper account.

"John H. Lambert, one of Lowell's oldest and best loved surgeons, of colonial ancestry, was born in Lowell. He was educated in Lowell Schools with 2 years in M.I.T., class of '98 and received his professional training at Boston University Medical School. He graduated in 1899 with degrees Ch.B. and M.D. His internship was at the Boothbay Surgical Hospital, Boston. Settling in Lowell, the doctor in 1900 was appointed to the staff of the Lowell General Hospital and six years later named roentgenologist and assistant surgeon. In 1916 he was appointed a senior surgeon and remained on the staff on active duty till retired and named honorary surgeon. A pioneer, here, in x-ray and radiology he served as consultant at the Bedford Veterans Administration Hospital for 10 years and until his death was radiologist of the Lambert Medical Associates in Lowell. He was a founding member of the N. E. Roentgen Ray Society and a member of the American Roentgen Ray Association. For the past twenty-five years he had been chairman of the Lowell Cancer committee and served as Director of the State Cancer Clinic in Lowell. Dr. Lambert held membership in the American College of Surgeons, the American and Massachusetts Medical Associations and was a past president of the Middlesex North Medical Society. He had also served as medical adviser to the Lowell Chapter of the American Red Cross. In the first World War, Dr. Lambert served in France with the Boston City Hospital Unit of the Army Medical Corps at Base Hospital #7 at Tours. In World War II he was Medical Director of the civilian defense corps in the Lowell area. Throughout his adult life, the doctor was active in civic affairs. He had served as chairman of the Lowell School Committee for several years and as chairman of the Lowell High School Building Committee. He had been especially interested in the Boy Scouts; had served as president of the Lowell Council for many years and, till his death, as chairman of its Camp Committee. He had also the twenty-five year award and the Silver Beaver. He was also active in "The Old Scouts" and was a member of the Appalachian Mt. Club."

Dr. Lambert died suddenly, September 10, 1949, at his summer home in North Holderness, N.H. The letter continues: "After John's death there came a citation from the Massachusetts Department of Public Health stating: 'In recognition of the years of leadership and service rendered by John H. Lambert, M.D., to the Lowell Cancer Clinic and the Massachusetts Cancer Control program, the Commonwealth of Massachusetts wishes to extend its appreciation and gratitude.' Signed by: Paul A. Dever, His Excellency, the Governor; Vlado A. Getting, Commissioner of Public Health; Herbert L. Lombard, Director, Division of Cancer and Other Chronic Diseases.

"As to my children, about whom you inquire, they are doing the work of the world as so many of their generation are. Perhaps they have inherited John's trait of hard work. John, Jr., is a graduate of

Maine University, a master in Forestry, Yale University, and is in the Massachusetts Conservation Department in charge of the cutting law. Elizabeth is a research technician, a graduate of Radcliffe, and has been in the Harvard Medical Physiology Lab, the Johns Hopkins Physiology Lab, and is now at Massachusetts Memorial Hospital working on cancer research. Ruth, a graduate of Connecticut College and M.A., Boston University, with courses at Chicago University, is instructor of Psychology, Chicago University Medical School and does court and private work as well as child guidance. Anne is a graduate of the Child-Walker Art School in Boston, is married and living in Los Angeles. Dr. Ben is a graduate of Williams College and Harvard Medical School and is a surgeon on the staff of the Lowell General Hospital and a trustee of the Lambert Medical Associates, a group which he and his father were chiefly influential in forming."

We thank our classmate for the response to our inquiry for information concerning her husband and the children. George Cottle and the writer called on the Lamberts at their home in Lowell just prior to the Golden Anniversary. John was so much interested and hoped to attend one of the events, but this proved impossible. We all remember how well he was represented by his wife. Her gracious speech, "The Model '98 Housewife" will be found on page 13 of the Golden Anniversary booklet and will repay rereading. Our classmate's letter points to another suggestion. You can supplement letters about yourself and classmates with information concerning your children, grandchildren and great-grandchildren, if you have any. Thus, we will become one great happy family.

Here's another illustration. The Boston *Herald* of December 30, in describing the 64th annual meeting of the American Historical Association, held at the Hotel Statler, prints the following: "The Watumull prize of \$500 was divided between Dr. Holden Furber, of the University of Pennsylvania, for his book, 'John Company at Work,' and Mrs. Gertrude Emerson Sen for her 'Pageant of Indian History.'" The Watumull prize is given annually for the best book on India, if it measures up to certain standards. Dr. Furber and his wife, Elizabeth Chapin Furber, were with us at the Country Club in June, 1948, and greatly enjoyed the occasion. The John Company is a popular name for the British East India Company, much as John Bull stands for dear old England.

Mention of the Golden Anniversary brings automatically to mind the name of the inimitable chairman, Lester D. Gardner. Lester, after many months of feeling very much below par or as he described it, "general weakness" — imagine this of our irrepressible and superabundant classmate — was examined at the Medical Center, New York. The trouble was located, and after surgical operations and neurological treatment, Lester is home again and is reported comfortable. Our best wishes to Margaret and to Lester. — We acknowledge receipt of a post card picture of Death Valley from Charles Godbold with the message: "This picture

is not much like your dear old Marblehead, but with it goes my best wishes to you for a satisfactory 1950." Thanks for the cheering greeting and wishes, Charles, and when you make your next transcontinental trek, come as far as Marblehead and drop in on us.

A chatty letter from Fred Gilbert reads in part as follows: "I worked for a while on Atlantic Avenue — fascinated by the boats coming in winter time, shrouded in ice, to Fisherman's Wharf. I have seen Marblehead a number of times, though know Salem better (where my Aunt lived). Good old New England with its 'rockbound' shores. Ah — I can smell the salt water and taste the clam chowder — (real Boston crackers too) not to forget the solid and fine, cultured people. Indeed, if it were not for the climate of my native Massachusetts, I would be happy to 'retire' there. Since 1899, I have lived in or near the Rocky Mountains. Pueblo and Denver are really on the 'plains' but in Durango and Leadville you can see the peaks. In my younger days I rode horseback and did some snowshoeing; not skiing, however! In 1927, we moved to Butte, Mont., for a four-year stretch at Montana School of Mines. Have been traveling all over Montana ever since. In 1938, got a job at Helena with the State Employment Service. Have made a considerable amount of area studies. Just now, they call me 'Supervisor of Industrial Services' also am president of the Montana Society of Engineers. I believe that I am entitled now to 'call it a day' and will officially retire at the end of the year. We look to the coast towns of Southern California (in the neighborhood of San Diego) for a spot to see the ocean, and watch the oranges and lemons grow." Thanks, Fred, for the letter and the personal greetings and good luck to you in finding the desirable spot.

We have learned through the courtesy of the Alumni Association of the passing of Reginald S. Tobey on January 23, and of Robert M. Draper on February 18. We are glad that both of these classmates were able to attend the Golden Anniversary. Reginald was there with his wife, to whom we extend our sympathy. Bob Draper was written up in several of the Boston and local papers and we quote, in part, as follows: "A native of Southboro, he went to Russia in 1930 to aid in the expansion of that country's metal industry. He also served as superintendent of smelters in Nevada and California. He was a life member of the American Institute of Metallurgical Engineers; New Jersey Consistory of 32d Degree Masons at Jersey City, and Euclid Lodge, A.F. & A.M. of Great Falls, Montana." Elliott Barker and the writer attended the services which were held in Cambridge, adjacent to his home, 82 Lincoln Street, Belmont. The minister was unusually impressive. After the services, Elliott drove the writer in to Boston in his new Studebaker car, and we enjoyed the usual happy, hearty '98 get-together and visit. We refer again to the idea of editorial boards in different sections of the country for class news — '98 is crammed full of self-starters. Why don't some of you self-starters in various sections of the country get together a group of class-

mates and take over the class notes for one of the issues of *The Review*? Think it over. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. JOSEPH C. RILEY, *Assistant Secretary*, 9 Pond View Avenue, Jamaica Plain 30, Mass.

• 1899 •

Correction please: In the chart of the picture taken of the Class at the '99 reunion dinner, which appeared in the November, 1949, issue of *The Review*, the name H. Russell Sawyer was given. Haven Sawyer was there "in person" and it is Haven himself in the picture, not Russell.

A tribute to William C. Phalen, who died on May 27, 1949, and whose obituary appeared in these columns in the November issue, was given before the Geological Society of Washington, D.C., in January by a friend, Ernest F. Burchard. This tribute was in the form of a memorial outlining our classmate's exceeding abundant life and outstanding professional achievements. William was widely known as an eminent geologist.

Wilbert C. Tandy of 213 Riverbend Street, Athol, Mass., was taken ill on July 1 last year, one month before his intended retirement, and died on September 12. Seven years ago, he had two serious operations and was not in good health thereafter. Wilbert was only with the Class during the freshman year but was known to some of us as a fellow with high ideals. On leaving Technology, he went to work in the plant of the L. S. Starrett Company of Athol and remained with them a total of 51 years. Your Secretary wishes he could reprint the wonderful eulogy of Tandy's pastor but space will permit only two quotations: "The world is poorer today because a righteous man has passed to his reward. Poorer because we have lost the influence of his example, the courage of his conviction. But it is also infinitely richer because we have seen among us a good man, who never pulled down his banner of truth and integrity." "No man ever tried to serve God and the cause of righteousness with sincerer purpose and whole heart more than did the man whom we affectionately called 'Bert' Tandy. A lifelong servant of the community and the church, he gave us good cause to show and to praise the quality of his character." — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

• 1900 •

Since the last issue of class notes, 11 more classmates have signified their intention of attending our reunion. They are: Ober, Sears, L. S. Smith, Jennings, E. H. Davis, Draper, Tuck, Miss Durgin, White, T. W. Brigham and Patch. This makes a total of 45 of the Class and 34 guests who expect to attend at least some part of the festivities. Sixty-eight indicate that they will go to the Cape with us. It is yet early, and we hope that there will be many others. Thirty have written their regrets; so in all, we have heard from only 75 of the 182 members of the Class.

We now have a quite complete program of the general features of the reunion. *Class Day* exercises will be held in Walker Memorial at 2:00 P.M., Thursday afternoon, June 8. A member of our Class will be expected to present a 10-minute address to the seniors at that time. *Commencement* exercises will be held at the Rockwell Cage on Friday morning, June 9. Members of the 50-year class will be invited to attend these graduation exercises. Special reserved seats will be held for them on the platform with the Corporation and Faculty. The exercises will probably begin at 10:30 A.M. Those taking part in the academic procession (including the 50-year class) will be expected to gather at 10:00 A.M. in the Armory Robing room. Special seats on the floor will be reserved for the ladies of persons seated on the stage and also for those of the 50-year class who do not wish to march in the academic procession. Don Severance '38, Alumni Secretary, will be marshal for the Class.

It is probable that there will be a special luncheon for the members of the Class and their ladies following the commencement exercises. After this luncheon, we will make our way to The Pines at Cotuit, on the Cape. Transportation will be arranged for all those who desire it. Request for such transportation can be made on a questionnaire which will be sent sometime later to all those who have signified their intention of coming. There will probably be very little set program for the days at The Pines. There will be plenty to do but most of the time will be spent in renewing old acquaintances. Very likely, there will be a banquet on Saturday night with a class meeting and it is hoped that Dr. and Mrs. Killian can be with us on this occasion.

On Monday morning, June 12, we will want to get back to Cambridge. The Alumni Day program begins at 10:30 A.M. with a new feature this year. Eight departments of the Institute expect to have members of their faculty explain their own department activities and plans for the future. This session has been set aside as a means for Alumni to renew acquaintance with members of the staff and with other Alumni of their courses or interests, as well as to learn more about the Institute and its work. At the *Alumni Luncheon* Monday noon, a special table will be reserved for the 50-year class. At this time, Dr. Compton and President Killian normally spend a part of the luncheon hour at this table. On Monday afternoon, there will be the usual *Symposium* which will this year be on the topic of Graphic Arts and will be held in the new air-conditioned library at 2:30 P.M. *Open House* will be held by President and Mrs. Killian in the President's home from 4:00 to 5:30 P.M. for attending Alumni and their ladies on Monday afternoon. The *Alumni Banquet* will take place at the Copley Plaza Hotel at 7:00 P.M., Monday evening, June 12. The ladies will be given a separate banquet at the Copley Plaza at 7:00 P.M. with the opportunity of listening to the exercises of the *Alumni Banquet* by public address system. Those ladies preferring it may attend the *Pops Concert* that evening with transportation to and from the concert provided and a

block of seats reserved for them on the floor. — Our thanks are due Don Severance, Alumni Secretary, for arranging the details of the program which we have outlined. It may seem to be a strenuous program but the two days at The Pines ought to be very restful.

It seems that the item about Dan Johnson, which we copied in the January, 1950, class notes, was somewhat incorrect. Henry Morris writes as follows: "Dan went to Nevada at my request in 1902 to help Fred Wilder and me run the Reno Reduction Works; and far from being merely a mineral surveyor, he was an extremely competent mill and smelter man even at that early date, for he had had training at the A. S. and R. plant at Pueblo, Colo. Later, Dan built several mills in Nevada and was a very prominent member of the engineering fraternity there and in California. He was a long-time member of the American Institute of Mining and Metallurgical Engineers which I have belonged to for nearly 50 years. He and I had a delightful six weeks together in 1947, visiting many of our old camps and haunts and I shall miss him greatly if and when I get west again." (This trip by Dan and Henry was reported in the class notes in the March and April, 1949, numbers of *The Review*.)

We have received word of the deaths of Mrs. Margaret Stannard on October 30, 1949, and of Philip Grabau, XII. — ELBERT G. ALLEN, *Secretary*, 54 Bonad Road, West Newton 65, Mass.

• 1902 •

Last December, Edwin E. Nelson retired as general superintendent in the electrical department of the Pawtucket and Woonsocket division of the Blackstone Valley Gas and Electric Company in Pawtucket. Nelson had served the company for some 30 years. — James J. Mahar has been named by Mayor Hynes of Boston to be a member of the Boston Housing Authority. Mahar was formerly superintendent of construction of the department of school buildings, former school commissioner, and also a former fuel engineer and supervisor of building construction for the Boston School Department.

Union College, Schenectady, N.Y., sent out the following release on January 31: "Prof. Warren C. Taylor, chairman of the department of civil engineering at Union College, and a member of the Union College faculty since 1910, now the oldest member in point of service, will retire from the college in June. . . . Professor Taylor joined the Union College faculty in October 1910, as an instructor, after having worked for eight years as a draftsman and engineer with several railroad and construction companies. . . . Since coming to Union College he has served as an engineering consultant for numerous large construction projects and in many legal cases. He is a member of a large number of professional societies. Prof. Taylor, besides his engineering work, has long been active in church work, having served as elder of the Union Presbyterian Church in Schenectady, a trustee of the Duryea Memo-

rial Church in the same city, and as a layman in numerous religious activities, including mission study groups. He was also organist for Union College for many years, and for four years served in the same capacity at the Union Presbyterian Church. . . . Prof. Taylor and Mrs. Taylor will continue to live in Schenectady and on their farm at Duane Lake, near Schenectady."

This is being written in town meeting season in New England, and we believe that the following from the Milton, Mass., *Record* will be of interest to Bob Edwards' friends: "Mrs. Robert Edwards, candidate for Milton School Committee in the forthcoming Town election on March 4 this week answered questions regarding her educational background and atmosphere when interviewed. She had lived all her girlhood in Dorchester, within a mile of Milton Village. She graduated from the Dorchester High School and Wellesley College in the class of 1907. Mr. Edwards is a graduate of Bowdoin College. . . . They lived in Oregon and later in California for a number of years, coming back East to Brookline during the First World War. The family moved to Milton in the Spring of 1927. They have four children, all of whom attended the public schools during the elementary school grades, and were graduated from Milton Academy. The eldest, Esther, (B.A., Wellesley, M.A., Boston University) is now principal of the Meadowbrook School in Weston. Betty, (B.A., Wellesley) is this year taking graduate work at Columbia University, after having taught for several years in Dedham. The youngest daughter, Jean, (B.A., Wellesley, M.A., University of Iowa) also taught in Dedham and now lives in Iowa City, where her husband is an instructor at the University. A son, Charles (B.S., Bowdoin, M.A., Fletcher School of Law and Diplomacy) lives in Hartford and teaches history and international relations at the Hartford branch of the University of Connecticut. Mrs. Edwards remarked that 'one picks up quite a little education from sharing the discussion of five teachers around a dinner table especially when all of them are still studying.'" It is pleasant to be able to record that Mrs. Edwards was elected by a large vote. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

• 1904 •

The May issue of *The Review* last year contained numerous items of class news culled from correspondence about our 45-year reunion. This year the news is almost nonexistent. A card from the Whitakers reported that they were touring Florida. It is probable that others of the '04 tribe did the same but no cards were received. Henry Kramer is seen now and then and looks well and prosperous. Bill Boggs was spotted at the American Institute of Mining and Metallurgical Engineers' meeting in New York last February. Although retired from his job as superintendent of the big copper smelter at Noranda, Quebec, he still keeps busy and recently returned from a trip to England. We are indebted to O. B. Denison '11 for a clipping from Louella Parson's column

in the Boston *American* of January 23. This is rather old news now but here it is: "Earlier in the evening, the bride and groom, Dr. and Mrs. Herbert Kalmus, paid me a visit at the Waldorf. Mrs. Kalmus, the former Eleanore King, looked chic in a new silk suit she just had made in Rome. The Kalmuses head for the coast early this week after a honeymoon in Europe."

The alumni office reports the death of Bob Hamilton, III, on December 26 at San Diego, Calif. No further details are available.

There are no retirements to report but this is probably due to lack of knowledge rather than lack of fact. It might be a good idea for those in the Class who have retired to send us a news letter on how they spend their time. Why not follow this suggestion and thus furnish some items for our class notes? — Parker and Hayward were the only '04 representatives at the midwinter meeting of the Alumni at Walker Memorial in February. The absentees missed an interesting evening. Since the attendance at this meeting was so small and we have no class reunion this year, we suggest a good turnout for Alumni Day in June. Make a note of it and plan to come. — EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

• 1905 •

Robert K. Clark, II, 2425 Hawthorne Lane, Flossmoor, Ill., reports, "retired," no date. Bob has three children, a daughter who is a registered nurse and a graduate of Northwestern University; one son graduated last year from Harvard, now at M.I.T. for a doctor's degree; another son in the eighth grade at a local school. Frank W. Brownell, 82 McAdam Avenue, Winnipeg, Manitoba, retired in August, 1948, after 40 years with the Manitoba Telephone System. Frank says, "happily married — no family, just celebrated our 40th wedding anniversary." An issue of the *Telephone Echo* gives us further news of this classmate, who has been heard from but seldom since graduation. Frank was assistant general manager of the Manitoba Telephone System at his retirement. He was president of the Alumni Association of Mt. Allison University, Sackville, New Brunswick, from which he graduated in 1901. He had been through all of the chairs in the York rites in Masonry, also Potentate of Khartum Temple, A.A.O.N.M.S.

Another classmate from whom we have heard little for many years is Victor Hugo Paquet, XIII, 4520 View Acres Road, Milwaukee, Ore. In answer to my request for three lines of personal information, Victor replies as follows: "Retired in 1943. In good health at age of 71, no living family, children or grandchildren. Past Master, Masonic Blue Lodge, uncompromising Republican, actively in anti-communistic activities. Have done and am doing literary work, two book-length works on mathematics ready for the publisher. In 1921, I won first prize of \$2,000 from the *Cosmopolitan* magazine for writing the last chapter of a

Vance mystery story, using the pen name of Hugo Hamilton. In the November, 1940, issue of *School Science and Mathematics* there is an article of mine and the solution of the trisection of an arbitrary plane triangle. In the first World War, my propeller design was adopted for cargo vessels, increasing speed three to five knots. In charge of ship machinery and machinery for shore shops, Pearl Harbor Navy Yard, 1926 to 1929. Carried out mathematical tests with Geiger Torsiograph on submarine diesel motors. Redesign of piston rings did it. At Bremerton Navy Yard in 1931 redesigned control mechanism for ships, received a citation from the Navy. In the first Hale-Shaw pump actuated oil pressure steering gears installed by the United States Navy found seven errors and/or poor designs, and redesigned. During the last World War was associate marine engineer with Everett Pacific Company, Everett, Wash. Built Navy Floating Dry Docks and other Navy vessels. Designed the large electric lighted automatic whistle buoy at the Pacific entrance to Columbia River. This with its two mates at Cape Flattery were the largest buoys ever built for the Coast Guard up to 1939. If all this indicates conceit, please ascribe it to an old man's retrospection."

Ralph H. Nesmith, XIII, 18 East Woodburn Avenue, Dayton, Ohio, retired in 1949 from his position as process engineer, Moraine Products division of General Motors. Ralph has two married daughters and three grandchildren. He plans to settle down in Howell, Mich., soon. George Fuller, I, reports: "Married, no children. Have been with the Bureau of Public Roads since August, 1918. Expect to retire in two years. Saw Willard Simpson in San Antonio last October."

Send in your registration now for the 45th reunion to be held on Tuesday and Wednesday, June 13 and 14 (longer, if you wish) at Oyster Harbors Club, Osterville, Cape Cod, Mass. You have already received an advance notice with registration card. Present returns indicate the largest and jolliest reunion since 1940.

A news clipping from the Waltham, Mass., *Tribune* tells of the death of Ida Annah Ryan, IV, at Orlando, Fla., on February 17. Miss Ryan will well be remembered as a coed. She was the first woman to receive a master's degree from M.I.T. also the first woman to win a traveling scholarship in architecture from M.I.T. After operating an architectural office in Waltham for a few years following graduation, as well as acting as supervisor of public buildings there for two years, she settled in Orlando, Fla., where she continued her work in architecture. Funeral services were held at the Universalist Church in Waltham. Harry H. West, III, died on August 17, 1949; further details not at present known. Harry will well be remembered as having attended his first reunion at East Bay Lodge, Osterville, in 1947. In recent years, he had conducted a roofing business in Laconia, N.H. — FRED W. GOLDFTHWAIT, Secretary, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, Assistant Secretary, 69 Newbury Street, Boston 16, Mass.

Six members of the Class attended the Midwinter Meeting of the Alumni Association held at the Walker Memorial on February 4. Besides the two Secretaries, they were George Guernsey, T. L. Hinckley, Chester Hoefer and Charlie Kasson. The group was honored also by the presence of Mrs. Hoefer who came at Chester's suggestion, although she hesitated about coming to what she considered strictly a stag party. As other ladies were present, she did not feel entirely out of place and was much interested in the demonstration presented by the Du Pont Company. Incidentally, the Hoefers started on a trip abroad about April 14 to be gone for an indefinite stay, most of the time to be spent in the Mediterranean region including Northern Africa. With further reference to George Guernsey, the Arlington, Mass., *Advocate* of January 26 included a notice of the marriage of George's daughter, Elizabeth, to Albert Heckbert, son of Mr. and Mrs. Leslie Heckbert of Francistown, N.H., who formerly lived in Arlington. The wedding took place at the Wellesley Congregational Church on December 24. The young couple are living in Belmont, Mass.

The *Atlantic Monthly* for March contained an article by Dr. James H. Means of Boston under the title of "England's Public Medicine: The Facts." Dr. Means was a member of our Class for one year but left to go to Harvard where he graduated from the Medical School in 1911. For the past 27 years, Dr. Means has been Jackson professor of Clinical Medicine at the Harvard Medical School and chief of the Medical Service at the Massachusetts General Hospital. He has made numerous trips to Britain, his most recent one occurring last year. Dr. Means concluded his review with the following significant paragraph which is of interest to all of us in view of the current discussion about socialized medicine in this country: "My feeling is that Britain is trying a momentous experiment in the nationalization of medicine. Since we too have great problems before us in our own country regarding the promotion of health and the provision of good medical care to all who need it in the community, it behooves us to watch closely and objectively the progress and outcome of Britain's project. Our observations will deepen our insight and may lead us to make wiser decisions concerning our own problems, which admittedly are different in many ways from those of Britain. We should be grateful to Britain for making this venture."

The Secretary was much interested to receive a news release from the International Acetylene Association announcing that another classmate was honored for his professional achievements: The man thus named is James I. Banash, VIII. The Secretary has very vivid recollections of Ira at the Institute and was pleased to hear of the recognition that has come to him as recounted in the news release which reads as follows: "The 1949 James Turner Morehead Medal . . . [was] awarded to James I. Banash, Consulting Engineer, Chicago, Illinois, . . . for his many years of stimulating inspiration, guidance, and encouragement of the

acetylene industry toward higher safety achievements. The presentation of the Medal . . . [was] made at the opening luncheon of the Annual Convention of the International Acetylene Association . . . held at the Fairmont Hotel, San Francisco, California, on Monday, March 27, 1950. The Morehead Medal is awarded annually by the International Acetylene Association to the person or persons who, in the judgment of its officers and board of directors, have done most to advance the industry or the art of producing or utilizing calcium carbide or its derivatives, the most important of which is the gas, acetylene.

"The medal was established by John Motley Morehead in 1922 in honor of his father James Turner Morehead, who sponsored the experiments leading to the discovery in 1892 of the electric furnace method of producing calcium carbide. Since then the medal has been awarded annually to those who have made outstanding contributions to the acetylene industry. Mr. Banash was graduated from . . . Technology with a degree in electro-chemistry. After graduation he continued at M.I.T. for a year as an instructor. He was with the Underwriters' Laboratories in Chicago for twelve years and became head of the Casualty Department. He is an internationally known authority on compressed gases. For many years he has specialized in their safe application and in fire and accident prevention in their relation to the physical and chemical sciences. Mr. Banash is widely known as an author and lecturer, and has achieved special prominence for his work in connection with the mechanical aspects of controlled atmospheres of high oxygen content, especially as applied to oxygen therapy. Mr. Banash's activities in connection with promoting safety practices were rewarded in 1932 when he was elected President of the National Safety Council. During recent years he has been a consulting engineer in Chicago. He is the consulting engineer for the International Acetylene Association, and an active member of many engineering and research societies."

Under date of February 13, the Secretary's heart was gladdened by the receipt of a letter from Herbert S. Philbrick which is reproduced below: "It has been in my mind for some time to write you and I shall delay no longer. I want my name to appear in The Review in 'Class Notes' before it is listed in a column headed 'Obituaries.' It has never been in either up to this time. Since 1942, I have been an emeritus professor of Northwestern University in Evanston, Ill. This job of being retired is a pretty good job. It is not one of idleness. One's interests become far more numerous. I put more time in on civic and welfare efforts; on making and decorating and restoring furniture and on taking photographs. I have even taken a shot at cooking some things. My modesty is all that prevents my claiming to make the best of all fish chowders. I came from Maine originally and still have ties of various sorts to that state. Mrs. Philbrick and I spent the whole of last summer in our house on Squirrel Island in Boothbay Harbor. We

were visited there by three of our four children and by four of our six grandchildren. I got much news of the Class from Stewart Coey. The Coeys we saw frequently.

"My Course at the Institute was II. I served for five years as assistant professor of Mechanical Engineering at the University of Missouri. In 1912, I was called to a professorship in Mechanical Engineering at Northwestern. I had the job of dean of men (under protest) for two years but have kept out of all other 'Deaning.' I carried during this period of time various jobs in engineering and business, and brought to an end my active work at N.W. by helping as chairman of the M. E. Department to plan building and equipment and curricula for the new N.W. Tech., made possible by Mr. Walter P. Murphy's gift of some thirty-one million dollars. My last year there was spent in the new school. I still live only three blocks from the school and enjoy the welcome I get when I go over there. Your class notes I always enjoy. You are to be thanked for your faithful performance of this important duty."

I hesitated about including the last paragraph of Philbrick's letter but I trust I will be pardoned for so doing. It is gratifying to know that these notes, as meager as they are sometimes, are enjoyed by classmates and the receipt of a letter such as the above is ample reward for the effort your Secretary puts into this column.
— JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington, 74, Mass.
EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, 82, Mass.

• 1907 •

Ralph Nickerson Hall, formerly of 226 Park Street, Newton, Mass., died on January 13, 1950. I did not see any notice of this event in the Boston papers, neither did I receive any notice of it from the Alumni Office nor from any of our classmates who live in the vicinity of Boston; and it was not until March 7 that I learned of it through a letter from Tucky Noyes of Augusta, Maine, who knew Ralph intimately and who attended his funeral on January 16. Although Ralph did not graduate from the Institute and was associated with our Class in the Course in Mechanical Engineering for only two years, he has been one of our most loyal and interested classmates during the last 42 years, having practically always attended class dinners and reunions. He was at Oyster Harbors Club last June and told me at that time of various serious illnesses that he had experienced during the preceding months. From 1905 to 1907, he worked for the Stanley Motor Car Company of Newton, and in 1907 became associated with the United Shoe Machinery Corporation. His entire business life was spent with this company, and for many years he was manager of their electrical department, having charge of all electrical equipment that was used in connection with the shoe machinery that they manufactured. He was an enthusiastic golfer and was a member of the Brae Burn Country Club of Newton for many years. He is survived by his wife and four sons.

In response to a note of sympathy that I wrote to Mrs. Hall on behalf of the Class, I received from her under date of March 17 the following note: "Thank you sincerely for your note of sympathy. It is difficult for me to realize, now that the memory of the months of sickness has diminished somewhat, that Ralph will not be coming back. He was so full of enthusiasms and the will to live. Our plans made through the years to be enjoyed after his retirement this spring are now only a dream. It is very lonely without him, and strangely, the loneliness intensifies rather than diminishes. However, I couldn't wish him to live unable to enjoy life as he always has, and his increasing weakness was a great trial to him. I am glad I urged him to go to the reunion last spring; for although he was not too well, he enjoyed the contact with his old friends and classmates and talked much about you all during the summer. I thank you personally and also the Class of 1907 for your words of sympathy and your loving thoughts of friendship for Ralph. Gratefully, (signed) Ethel Loveland Hall."

Edwin W. James, chief of Public Roads' Inter-American regional office in Washington, D.C., was one of 12 officials of the Bureau of Public Roads of the United States Department of Commerce who received recognition on last February 14 for outstanding achievements in government service. Edwin was graduated from Harvard University in 1901, receiving the degree of A.B., cum laude, and was later associated with our Class, taking graduate work in the Course in Civil Engineering. You will no doubt remember him as the author of both the book and lyrics for the Tech Show of 1907. He joined the staff of the Bureau of Public Roads as a highway engineer in 1910 and has been associated with the Inter-American highway project since 1928, when Congress passed a resolution authorizing Federal assistance in the development of such a highway. Since 1941, he has devoted his full time to this project.

According to an announcement in the *Boston Herald* on March 12, two of our classmates who have been members of the Faculty at the Institute for a great many years will retire in June of this year. Ralph G. Hudson, Professor of Electrical Engineering, who has been a member of the staff of the Department of Electrical Engineering since 1907, and Ed Moreland, who at one time was dean of engineering and who now is executive vice-president of the Institute, are the two men of our Class who will end their active daily duties as members of the Faculty.

A brief note received from John McMillin under date of March 16 states that he has moved from his Forest Hills, Long Island, New York, home to River House, 435 East 52d Street, New York 22, N.Y. He is still financial vice-president and a director of the Cities Service Company, a position that he has filled for many years, with his office at 60 Wall Street, New York, N.Y. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

The Midwinter Meeting of the Alumni Association on February 4 was attended by George Freethy, Myron Davis, Joe Wattles and his son, who is at Lowell Textile School, and George Belcher. It was announced that Campbell Soups, of which Jim McGowan is president, had given \$1,000,000 to the M.I.T. Development Program. — Bill Given, President of American Brake Shoe Company, spoke before the New England Purchasing Agents Association at the Hotel Vendome, Boston, on March 13. His subject was "Purchasing's Opportunity." His handling of the "question period" that followed was especially enjoyed.

The third dinner meeting of the 1949-1950 season was held at Thompson's Spa Club Grill Room on March 14 at 6:00 p.m. The following were present: Bill McAuliffe, Karl Kennison, Fred Cole, Sam Hatch, Myron Davis, Joe Wattles, Jeff Beede, Leslie Ellis, Linc Mayo, Harold Gurney and Nick Carter. Henry Sewell, Herb Cole, George Belcher and Winch Heath had hoped to be with us but couldn't make it. Linc Mayo reported on the mail ballot in connection with a proposed 42d reunion this June. Replies to date would not warrant our holding such a reunion, so we will work instead on getting a big turnout for Alumni Day, June 12. Karl Kennison showed a very interesting colored movie of the manufacture of the reinforced concrete steel cylinder pipe and its installation to form the Hultman pressure aqueduct between Wachusett Reservoir and the Charles River. He also showed us some very beautiful Kodachromes which he had taken at Quabbin Reservoir. The fall coloring was especially fine.

We are sorry to report the death on January 31 of Lincoln Soule at his home in Scituate, Mass.; also the death on December 17, 1949, of Rodney Caryl at Bend, Oregon.

We have the following changes of address to report: Frank K. Belcher, 3723 South Clement Avenue, Milwaukee 7, Wis.; Harry Howe Bentley, 451 West Seventh Street, Claremont, Calif.; John W. Bicknell, Hopewell Junction, N.Y.; Herbert A. Cole, Jr., New England Telephone and Telegraph Company, Room 202, 185 Franklin Street, Boston 7, Mass.; Henry J. Noble, 461 Fort Washington Avenue, New York 33, N.Y.; Alexander C. Sloss, Jr., 909 Virginia Street, Grand Rapids, Mich.; John R. Tabor, J. R. Tabor and Associates, Union National Bank Building, Houston, Texas.

The fourth and final dinner meeting of the Class will be held on Tuesday, May 16. Usual reply post cards will be mailed. — H. LESTON CARTER, Secretary, 60 Batterymarch Street, Boston 1, Mass.

• 1909 •

Some of us were fortunate enough to attend the grand dinner given in the ballroom of the Copley Plaza on March 8 for the promotion of the M.I.T. Development Program. There was such a large gathering that your Review Secretary was unable to locate or learn of the several '09 members who must have been present. By some dispensation unknown to the

writer, Henry Spencer, II, with Art Shaw, I, managed to reserve a table and invited Muriel and the writer to sit with them. We learned that Johnny Willard, II, and Ken May, VI, were scheduled to be present but did not see them. The details of the dinner with the interesting talks by Marshall Dalton'15, Karl Compton and Jim Killian'26 are undoubtedly given elsewhere in The Review. We were proud to learn that half of the total of \$20,000,000 has already been raised. Three of our classmates are active in the Greater Boston area in the matter of pushing the campaign. W. A. Ready'13, President of the National Company, Malden, Mass., is in full charge and Henry is a "captain" of the group which solicits the '08 and '09 men. He has appointed Ben Pepper, I, and Johnny Willard, II, as deputies to contact us, and H. L. Carter '08 and Frank Towle'08, to contact the '08 men. Many of us already have been contacted and let's hope that '09 does its duty. As we have pointed out previously in connection with the class fund, Molly, XI, has arranged that all contributions to the Development Fund are also credited to that already large class fund which we reported at the 40th reunion.

We have reported in other numbers of The Review that Ben Pepper, I, and Barbara now make regular trips to Mexico, sometimes going by car, sometimes by plane, and other times by train. The two left March 20, this time by boat to Veracruz and thence to Mexico City by rail. As usual, they plan to meet Garnett, III, and Jesse Joslin. They are quite sure that Ramon Munoz, III, of Monterrey, who started the "one man" Technology club in Mexico will also be there. The Peppers and Joslins then plan to tour some more of the country with special attention to that delightful west shore resort, Acapulco.

Last month we reported that Francis Loud, VI, had gone to Puerto Rico on a business trip and we looked forward to a communication from him telling us about that possession of Uncle Sam. He writes as follows: "It was my good fortune to spend parts of last November and December in Puerto Rico. This was a very interesting trip to me as it was my first visit to this island, although I had previously seen others of the West Indies. The warm climate and the tropical verdure also have a great appeal at this time of year in contrast with New England winter weather. You have, no doubt, seen some of the advertising of the new Caribe-Hilton Hotel in San Juan, the principal city and capital of the island. This hotel was completed and opened while I was there. Its design is quite original in that all of the guest rooms have an ocean view through enormous windows and from individual sheltered balconies. This ten-million-dollar project was built by the government and leased to the Hilton management for operation. It is part of the campaign which the government is waging to attract tourist business to the Island.

"The Condado Beach Hotel, where I stayed, is also excellent, well managed and comfortable, and is building an extension which will double its capacity. They are also trying to build up industrial

activity and have offered tax abatements and other inducements to encourage manufacturers to build plants. Textron, Inc., for example, is building a new textile mill near Ponce on the south shore of the island, its second largest city. This industrialization is expected, of course, to bring increased income and purchasing power and to be one step, although a short one, toward the solution of the island's main problem which is population, already dense and growing rapidly. Another step being taken is the encouragement of emigration but this, too, can be 'only a drop in the bucket.' In spite, however, of this overpopulation and the low standard of living of large numbers of the people, no great amount of misery or suffering is apparent to the casual observer, at least. On the whole, the people, living simply in their accustomed way and largely out-of-doors, seem to be happy and contented.

"Our firm, Jackson and Moreland, are consulting engineers for the Puerto Rico Water Resources Authority, a government agency established primarily for hydroelectric development as the name indicates, but now operating all of the public production and distribution of electricity over the entire island. At present we are building a new power plant for them which will contain three 20,000 kilowatt turbogenerators operating at 850 pounds of steam pressure." — PAUL M. WISWALL, Secretary, Box 125, Glen Ridge, N.J. CHESTER L. DAWES, Review Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass. Assistant Secretaries: MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

• 1911 •

A junior school of forestry, wild life management and conservation will be opened in Rutland, Mass., this summer by the Worcester Natural History Society, thanks to the generosity of Fred Daniels, VI, chairman of the board of Riley Stoker Corporation, who donated approximately 300 acres of land, including his former summer home and furnishings, in late February. The school will be known as "The F. Harold Daniels Junior School of Forestry and Conservation" and during the first summer will be for high-school-age students only. Plans for admitting adults in future years will be considered, but originally it is planned to have a four-year course of one two-month period each summer in July and August. Richard C. Potter, director of the society, told newsmen "the lack of a proper training spot for people who were at the high school level was the only gap in our program," adding that "Mr. Daniels' gift has made it possible for Worcester Natural History Society to become the most complete unit of its kind in the country." Fred is a native of Worcester, graduated from Yale University before joining us at M.I.T. and has long been among the leading philanthropists of "The Heart of the Commonwealth," as Worcester is known.

Another Yale '08 graduate, who joined us in our sophomore year and went on to graduate with us — Ed Pugsley, VI — also was in the news in February, when

announcement was made by the Winchester Repeating Arms Company in New Haven, Conn., that Ed would be succeeded as associate director of research for Winchester by James C. Hartley, but would continue in a consulting capacity until his normal retirement under the company pension plan in November of this year.

Ed, a recognized authority on firearms, has been with Winchester ever since graduation, during which he has held many important executive positions with the company. In addition to his last assignment as research head, he is also a director and assistant secretary of the parent company, Olin Industries, Inc. He lives with his wife at 76 Everit Street, New Haven, and the Pugsleys have two daughters, Mrs. Ralph Alley and Mrs. Robert W. Gaines, and a son, Edwin, Jr., all of New Haven. An associate fellow of Silliman College of Yale in 1908 and a graduate of M.I.T. in 1911, Ed is a member of Morey's, the Graduates Club, New Haven Lawn Club and Faculty Club of New Haven; the Yale Club, Century Club, Newcomen Society of England and University Club of New York City; American Ordnance Association, National Rifle Association and he is also a member of the executive committee of the board of directors of the Marine Historical Association of Mystic, Conn.

Through the thoughtfulness of Cac Clarke, diligent Secretary of the Class of 1921, we also learned in February of the death of Mrs. Elizabeth Ann Sayce Orchard, 88, widow of Edward Orchard and mother of Bill Orchard, XI, of whose recent honors we wrote in last month's class notes. A note of sympathy was, of course, written to Bill at once. Cac also enclosed an earlier clipping from the Newark, N.J., *Evening News*, with a picture of Bill at the time he became chairman of the board of "The Hospital Center at Orange," a January 1 merger of Orange Memorial Hospital and the New Jersey Orthopedic Hospital. — He also thoughtfully included a clipping from the magazine section of the Newark Sunday News of February 5, telling of Newark inventors — which includes Edison — and in which was included Dick Ranger, VIII, "who invented the photo-radiogram and the electric organ chimes." The article also included a picture, captioned "Richard Ranger and 'pipes' of his electric organ." As we have told in earlier issues of 1911 notes, Dick is now making rapid strides in the development of his Rangertone tape-recorder for broadcasting stations and the movie industry.

Speaking of accomplishments, I believe I have neglected to report to you the fine greeting General George Kenney, I, penned on the title page of a first edition copy of his recent fine book, which he presented to me. I like it and I'm sure you will like it too: "General Kenney Reports to Orville B. Denison: I hope you like this story of American kids winning a war and making reputations for their generals. Sincere regards and best wishes from your old fellow-Elevener. (Signed) George C. Kenney, Gen., USAF."

George addressed a meeting of the Buffalo, N.Y., Junior Chamber of Commerce in mid-March and stated that

"the new D-Day of a third world conflict might be much closer than we had thought." He did not elaborate on why he thought this to be true, but in his speech George said: "If we go down to defeat in a struggle which daily seems more and more inevitable, we will live out our lives in an antlike existence as robot slaves in a satellite state receiving its orders from a foreign dictator." He also stated that Russia now has "the world's largest army, the largest submarine fleet and more aircraft than we have."

At the 25-year anniversary ladies night of Gardner Rotary Club at the Nicewaug Inn, Petersham, in mid-March we were delighted to have Harold Shaw, II, and his wife present. Harold, as reported last month, is now president of the nearby Leominster Rotary Club and during our conversation with Mr. and Mrs. Shaw, Sara and I secured a promise that they would both do their best to be at our 40-year reunion at East Bay Lodge, Osterville, June 8, 9 and 10, 1951. That's progress.

Aeronautical Engineering Review for February has contrasting pictures of the Wright-type, Burgess-built seaplane Luis deFlorez, II, used in 1911 for his thesis, and the Phantom jet-type in which he recently flew in connection with the following editorial: "Not so long ago (December 8, to be exact), Luis deFlorez dropped in, boiling with greater-than-average enthusiasm — which, for the Admiral, means a fairly high temperature. He had checked out on the McDonnell Phantom at Floyd Bennett Field the evening before and that afternoon had added several hours of jet flying to his long and distinguished piloting record. The thing that caught our fancy, however, was the Admiral's remark that he had first learned to fly on a Wright-type pusher biplane (a Burgess) in 1912. That is a record that few (if any) pilots could match. Most of the real Early Birds are now too far along to be able even to climb into a jet fighter, to say nothing of flying it. Apart from demonstrating the well-known deFlorez dexterity with aircraft, the event pointed up dramatically how far we have come in a few brief years.

" . . . Aeronautical advance now depends more on effective teamwork of large groups than upon the singlehanded contribution of the individual. Although in the past we have gone ahead with remarkable speed, as Luis deFlorez has demonstrated, the 'team concept' has greatly accelerated our rate of advance. Although the going gets tougher as we progress — who knows, we may yet find an 'Early Bird' at the controls of the first rocket to the moon!" And we'll gamble that if such a thing does come to pass, it will be Luis who'll do it.

When the fine, new Mystic River Bridge — which joins Charlestown and Chelsea — was opened in late February, we of 1911 took particular pride in the fact that Charles A. Maguire (I) and Associates were consulting engineers to the Mystic River Bridge Authority. This new bridge, built on a two-level plan for opposite direction traveling on each level, is over two miles long or just better than a half-mile longer than the Golden Gate

Bridge in San Francisco and more than twice as long as the Brooklyn Bridge in New York. Chalk up another "first" for Boston!

Last month we mentioned the fact that Bill Coburn, XI, Head of William H. Coburn and Company, investment counsel, Boston, spoke on "Investing Money Today" at the meeting of the Boston section of the American Institute of Mining and Metallurgical Engineers at Cambridge on February 6. Since that time, Bill has sent us a copy of his paper. "The idea of successful investment," Bill said at the start, "is quite simple: buy when prices are low and sell when prices are high, but what makes it so difficult to invest successfully is the fact the vast majority of investors follow the crowd and the crowd is always wrong." He then described "The Dow Theory," developed over 50 years from the editorials of Charles Dow, founder of the Dow-Jones Financial News Service, whom Bill described as "a New Englander, intelligent, and a man who knew his business." The original Dow theory had three basic principles: the daily variation due to local causes and the balance of buying or selling at that particular time; the secondary movement covers a period ranging from 10 days to 60 days, averaging between 30 and 40; the third swing is the great move covering from four to six years. The second was that both the stock market and business were subject to recurring cycles, the interval between which was about 10 years. The third was that no move in the market was significant and valid unless it was confirmed by both market averages. From this original beginning, according to Bill, the Dow theory has been elaborated until today it is used to forecast price changes in the stock market itself.

He then discussed various formulae plans, economic theories and business cycles, them stating "The Coburn Theory," under which three major factors are given equal weight in deciding whether to buy or sell a security: "First is the technical action of the entire market, as shown by accepted 'averages'; second is the economic position and the technical action of an important market group, such as public utilities; and third is the factual position of individual companies in that group and their relative technical action." In concluding his talk, Bill stressed technical market analysis and factual analysis, closing with the words of a famous American banker: "Never be a bear on the future of America."

Here are four address changes: Merton W. Hopkins, I, 20 Church Street, Greenwich, Conn., formerly Old Greenwich; A. Washington Pezet, XIII, 65 University Place, New York 3, N.Y., formerly Millenton, N.Y.; Lester A. Stover, II, 3182 North 9th Street, Kansas City 2, Kansas, formerly Minneapolis, Minn.; Leland D. Wood, VI, 16 Center Street, Yarmouth, Maine, formerly Norwich Conn. — See you at Alumni Day, June 12! — ORVILLE B. DENISON, Secretary, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

We are sorry to receive word that Bernard Morash of Toronto expects to spend

a few months at the Freeport Sanatorium, Rural Route 3, Kitchener, Ontario, where he is taking the streptomycin cure for inflammation of bronchial tubes. We wish him a most speedy recovery and are sure he will welcome letters or cards most heartily. Your Secretary's supply of news is at the lowest point reached for a long time. How about *you* helping out. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, *Assistant Secretary*, 4520 Lewiston Road, Niagara Falls, N.Y.

• 1914 •

Nowadays it is rare for '14 to have a wedding of a classmate, but we have one to report this month. On March 5, Vernon Tallman was married in the First Unitarian Church in West Newton, Mass., to Mary Elizabeth Harrington of Newton. After a wedding trip to Bermuda, Vernon and his bride will make their home in Weston. — One can never tell what the years will bring about. Who would have thought that Dinny Chatfield would become one of our enthusiastic horseback riders. Your Secretary learned of this in a rather indirect manner when writing Dinny regarding trips in the Rocky Mountain region. Dinny wrote that he is planning a trail-riding trip this summer. He has a horse of his own and previously has spent some weeks riding at a ranch in Montana.

Charlie Fiske arranged for a 1914 dinner in New York on March 9. Through the courtesy of Bull Owen, we were able to make use of the Yale Club for our meeting place. While the attendance was smaller than normal, there certainly was no lack of enthusiasm in those attending. It became much more of a general '14 gathering than simply one of the New York group, as four out of the 12 present came from out of the New York area. Boggs Morrison, who does considerable traveling around the country for the Arthur D. Little Company, happened to be passing through New York and, of course, attended. Atwood, who has his own business, was also in the city and joined the group. Art Peaslee, whose official home is in West Hartford but who is one of the class' world travelers, had just returned from an extensive trip in Europe. He told a bit about the various places he had visited, particularly in Italy, and insisted that the water was much too cold for good swimming at Capri. Others attending were Affel, Fiske, McFarlin, MacCart, Mudge, Ober, Owen, Somerby, and your Secretary.

George Zimmele, who is sales technician for the W. A. Cleary Corporation of Brunswick, N.J., and whose home is in Brooklyn, sent his regrets. Unfortunately, the reason for missing the dinner was that he had recently been in an automobile accident, but he is now recovering. Alden Waitt had hoped to be present but had to delay his trip to New York until later in the month because of an automobile trip through the South. While Alden's destination is Florida, he is planning to stop off at Fort Bragg, N.C., in order to visit his son who is an officer in the Paratroop Infantry of the 82d Airborne Division.

Have you made your plans to be present on Alumni Day, June 12? Your Sec-

retary regrets that he does not expect to be able to be present as he must be on the West Coast at that time. This in no way will stop a '14 gathering, and arrangements will be made for it. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morrisstown Road, Elizabeth 3, N.J.

• 1915 •

Really help Azel! Pay your class dues. If you haven't already paid, now is a good time. We are lagging considerably behind our record dues collection from 1948. Let's make it up quick. — Our reunion at Coonamessett is going to be our biggest and best. Don't miss it. Look over the folder. Aren't there some classmates coming whom you'd like to see again. Relax on the Cape; visit M.I.T. on Monday; bring the wives and lady guests to the class cocktail party on Monday afternoon at the Copley Plaza; and finish up a gay reunion week end at the Stein-on-the-Table Alumni Dinner that night.

All records for class interest and spirit were shattered at a Boston class dinner, March 17, at the Boston Yacht Club when at the height of our discussion of reunion plans, amid a gay welcome, in walked Hank Marion from New York. Hank came over to assure us that his committee of Ralph Hart and Tower Piza is really going to get out the attendance of the Metropolitan New York group. It certainly was grand of Hank to join us; we were all glad to see him and thoroughly appreciated his coming up for the affair. Max, Weare and Wally presented their committee reports on reunion plans and the cocktail party for the ladies. Sam Eisenberg and Frank Murphy have taken care of plans for the reunion transportation headquarters from Room 5-112 at M.I.T., Friday noon, June 9. Bill Brackett's past experience is of such invaluable help that he has joined Wally's committee.

If you fly to Logan Field in East Boston and will let us know your flight number and time of arrival, we'll have a chartered plane pick you up and deliver you in front of Coonamessett Ranch for a very nominal charge per man. Nice service! Your committee thinks of everything for your comfort and convenience. I spent a week end at Coonamessett Ranch with Max and Weare when they made their arrangements and I am most enthusiastic about the place and the reunion we will have.

Present at that Boston class dinner were guests: James W. Tonra, Chief of Police, Brookline, Mass.; Max's guest, Louis O. Clements from Framingham; Sam Eisenberg's son, Gene '48; and my guest and protégé, Jack Mohr '50. Classmates attending were: Bill Brackett, Bill Campbell, Abe Hamburg, Loring Hayward, Wink Howlett, John Homan, Fannie Freeman, Sam Eisenberg, Larry Landers, Azel Mack, Frank Scully, Frank Murphy, Pete Munn, Pirate Rooney, Wally Pike, Henry Sheils, Carl Wood, Louie Young, and Max Woythaler.

Bill Campbell, Executive Director of the \$20,000,000 Development Program Fund spoke about the work of the committee and the excellent results. Due to pressure of his job as chairman, Jack Dal-

ton was unable to attend but wrote this letter which calls for congratulations and thanks to the 15 men who have so generously contributed to this \$75,000: "I have just been going over results to date; and in particular, as I thought of the class dinner on the 17th which I cannot attend, looked up the figures for 1915. It was a great satisfaction to find that 1915 total cash and pledges to date are nearly \$75,000. I know the boys will be glad to hear this. Give all of them my best regards and my personal and official appreciation for all the Class is doing to help this great Development Program."

Although college graduations and European travel are conflicting with our reunion date, we should have 75 to 100 with us for that happy week end. — A great deal of news this month from many widely scattered classmates. Sam Berke, taking it easy at Doc LaFavers Fishing Lodge, Welaka, Fla., pens this: "I am spending a month here with my brother and using this place and the time for a national sales meeting — as it has been very hectic; people are coming and going all the time. We are running a veritable taxi service between here and the airport, 70 miles away. We have a fishing lodge here and have had it for 17 years and we think it is the finest fishing in these United States. Again I am in a jam about the reunion this year. Evelyn, Johnny and I sail for Europe on June 8 and will be gone until July 13. We will spend all of our time in Paris; I have some business to attend to and our touring will be limited to seeing the city. However, I will be in Boston in April or May and will give you a ring to see if I can be of any help. Kindest regards to you and Frances." On the very bottom of the letterhead it reads: "Praise God — Be quiet and go fishing."

From Paris, 79 Avenue des Champs Elysées, Ken Boynton writes: "Dear Hazel: I have your letter of February 24 with regard to class dues and am enclosing a cheque. Sorry not to be able to report the visit of any classmates since that of Frank Scully approximately two years ago. It seems that all the world is visiting Paris but not very many men from the Class of 1915, at least they do not make themselves known. I think Douglas Baker was here last year but did not find it out until after he was gone. I cannot tell you much about myself, except that as usual I am doing a great deal of traveling. I returned from New York late in January and have since made trips to England, Holland and Switzerland. I expect to be in Spain, I hope, next week; and if something unforeseen does not develop, I intend to get a short vacation in the Island of Majorca. With best regards for all." Ken qualifies the Dear Hazel in his letter by adding a postscript in pen at the bottom of the sheet of his beautifully typed letter: "This is too good to change — you know the mute H." I hope that Sam and Ken can get together in Paris.

From Oakland, Calif., on a Nemo Soft Drink letterhead with the heading "Soft Drinks" Earle Brown says: "I would have made my class dues check more but I wanted you fellows to stay sober." We're hoping Earle Brown will be with us at the reunion. — You can always count on Wayne Bradley: "I have recently re-

ceived several communications regarding the 1950 reunion. I assure you I am planning to be with you at that time. Sorry that it will be impossible to attend the class dinner in Boston this week, but hope you will say hello to the boys for me. Last year we formed a new rubber company in Voluntown, Conn., Griswold Rubber Company, Inc., of which I am president and general manager. We are making sponge rubber products for the automotive industry and are doing all right. Please keep me informed as to development along reunion lines." — Lucky Harry Murphy with those South Pacific tickets! Writing from the Massachusetts Engineering Company, Inc., of North Quincy, Mass., Harry says: "I won't be able to go to the Boston class dinner at the Boston Yacht Club because my wife has four tickets for South Pacific in New York the same night and we are going with two of my kids who go to school not far from New York. However, I'll give Mary Martin your kindest regards if I see her after the show." — Tom Huff will see us at the reunion with some new stories: The one he enclosed with his class dues check has been, of necessity, deleted by the censor.

At long last we have revived a good old classmate who simply vanished after the 1940 reunion at Oyster Harbors — and no wonder. Many thanks, Larry, for your extra generous check for dues. Writing from Post Office Box 284, Middletown, Conn., Larry says: "Glad to receive our class notice of February 24, and hope enclosed check will atone for years of neglect. Things about here have improved considerably since our memorable reunion at Oyster Harbors in 1940 and there seems to be gold in these Connecticut hills. The Quirks are still at the same old farmhouse and the kids have grown up (I hope). No marriages yet but there are potent signs in the Heavens. Bill, my oldest, was in a radar outfit in Europe during the war and is in his senior year at R.P.I. This really is treason! After graduation, I expect to have him share in my lucrative racket. Lou, the second (in a Navy beach battalion in Europe and the Pacific) has started teaching school and physical education in the hinterlands of Connecticut. Charlie, my youngest, is a big gun in the Connecticut State Tax Department. So much for the Quirks, except Minetta is getting more attractive every day. Are we having a class reunion this year? If so, will you please send me the details. Henry Sheils and Sam Eisenberg dropped in one day last summer and we had a pleasant visit. No more information at this time; so, with a 'Stein-on-the-Table' and kindest regards, I'll close."

We're all glad to know that Henry Daley has completely recovered: "Attached is a check in reply to your 'touching' appeal. No letter this time as I worked overtime when I was laid up in the hospital last November and December. I am fully recovered and feeling fine." — Abe Hamburg was scheduled to sail for France on March 31 on the Nieuw Amsterdam and meet his wife, Haya, in Paris on April 10. Haya was flying from Tel Aviv to meet him in Paris. She has been visiting her family for several months. Their son, David, who has been studying at Grenoble University will join

them from Vienna where he has been studying(?) old world customs. Abe and his family will tour Switzerland, France and Italy for two months, returning just in time for the reunion. Everyone will agree that Abe richly deserves this holiday and relaxation. We'll all be glad to see him and hear all about his travels.

Loring Hall has been at The Wigwam, Litchfield Park, Ariz., and writes: "Your note of February 24 reached me out here. We are enjoying Arizona's perfect March weather and get in several games of golf each week. In between times, we explore the surrounding mountains. If there are any active 1915 men in or near Phoenix, I'd like to look them up!" — Jerry Coldwell is up in the air again! "I've been carrying this check around for the past few days and guess I'd better mail it. I have been in Los Angeles for a few days, San Diego yesterday and probably will be back in New York the middle of next week. No particular news; I still expect to make the reunion in June. As you know, I've tried to make it before and haven't had much luck. I should get a break this time!"

I am truly sorry that we cannot find space for Mrs. Holway's very fine letter regarding one very interesting family but be assured that it will be in next month's Review. — Big doings expected at the reunion; big checks expected for class dues from those who haven't yet mailed them in to "help Azel." — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

According to Tom Berrigan, director and chief engineer of the M.D.C., and a member of the national water pollution control advisory board of the United States Public Health Service, the elimination of all grease, disease-producing bacteria and so forth, which are attributable to the whole south metropolitan sewerage system of Boston will be accomplished within three years. He feels that within this time Quincy waters will be fit for swimming, bathing, boating and shellfish taking. This will result from the operation of two new sewerage treatment plants that are now under construction. This should be good news for those in the Boston area and perhaps Tom could be of real help to any of you in other areas where water pollution conditions exist.

We hope that many of you read the New York *Herald-Tribune* Book Review for Sunday, November 20, 1949. A portion of it was devoted to a review by Major General H. W. Blakeley, U.S.A., retired, of Vannevar Bush's book *Modern Arms and Free Men*. The book is a discussion of the role of science in preserving democracy. The review is too lengthy to quote in full but was immensely interesting. The last paragraph speaks for itself: "This book is recommended without reservation. No one reader will agree with all of its full discussion of so many controversial and vital subjects, but every reader will find that it has broadened his background of knowledge of our current military problems." Do read the book. We thought it was really wonderful and feel sure you will all agree.

V. L. Ellicott, M.D., County Health Officer of the Montgomery County Health Department, Rockville, Md., wrote an interesting newsy letter that we quote in full: "For the past 18 years, I have been the county health officer of Montgomery County, Md., a rural and suburban community of 140,000, adjacent to Washington, D.C. These have been the happiest and most satisfying years of my life. I believe that the career of a local health officer is ideal for the man interested in both medicine and public service. My wife, Mary, and I are Baltimoreans, are fond of our native city, and often visit our families there but we have a nice home in the suburbs of Washington and have brought our three children up as Washingtonians and Montgomery Countians. The oldest, LeMoyne, is a junior at Princeton. The next, Joy, a girl, is a senior at Mt. Vernon Seminary, and the youngest, Don, is in the 5th form of the Landon School for Boys. As to hobbies, my family and home are number one, and at present growing pink dogwoods is number two. It was a pleasure two years ago to spend three months in Boston participating in the health section of the Greater Boston Community Chest Survey and to see Professor Horwood and Professor Prescott and other friends of my Course VII days at M.I.T." We think Val has one of those jobs that is wholly satisfying and know exactly what he means and why he feels as he does. Nobody can be completely happy, but doing for others is just about the closest we can ever get to it.

Rudy Gruber wrote a fine letter for the column. We will quote it in full, too: "In October, 1916, I joined Merck and Company, Inc., manufacturing chemists at Rahway, N.J., as factory chemist. In 1926, I was made vice-president. From 1930 to 1945, I was in charge of the New Products division co-ordinating the development of new products. During these interesting years, I participated in the launching of the synthetic vitamins, sulfa drugs and during the War, of penicillin. In fact, I was liaison during the War between British and American firms in the wartime development of penicillin, in co-operation with the O.S.R.D. Since the end of World War II, I am devoting myself to co-ordination of the foreign activities of our firm, particularly the licensing of new products and processes. Of foremost interest was the licensing of penicillin and streptomycin knowhow to firms in Britain, France, Sweden, Germany and Spain. While among the products acquired from abroad the antihistaminics were of greatest interest. After a 10-year interval, I visited Europe in 1947 and again last year for a 14-weeks survey which took me from Naples to Oslo. As an example of some of my extra-curricular activities, I enclose specimens of some of my writings. During the growing season, my garden in Colonia, N.J., keeps me out of mischief. Merck and Company, Inc. boasts of a goodly number of M.I.T. men — executives and members of the technical and scientific staff. Foremost, of course, is Vannevar Bush '16, who has recently joined our board of directors, Per Frolich '23, Vice-president and Director of Research, Ed Nolan '30, Production Manager, Blythe

Reynolds'20, Vice-president for Engineering, Jack Woodruff'11, Director of Microbiologic Research, and so on. While I have not been at many 1916 gatherings, I have, in the past, seen a good deal of Bob Wilson, and occasionally run across George Maverick and Joe Meigs. Let me say that I always enjoy reading the 1916 class news in *The Review*. The writings he sent which he mentioned in his letter were entitled: "Antimalarial Ammunition," "Therapeutic Progress Through International Cooperation," "Penicillin and Streptomycin" and "Penicillin - Progress and Problems." Although he didn't say so, we imagine if you wrote to him, Rudy would be glad to send reprints to any of you who are interested. We wish him continued health and success and hope we will see him at our next class reunion. Hope soon to have some real news for you in regard to the class reunion, but at the time of going to press, there was nothing definite to report except the dates of June 8, 9 and 10 of 1951.

Charley Crosier sent the following newsy letter: "I have been associated since 1927 with the Aetna Casualty and Surety Company, the casualty company affiliated with the Aetna Life Insurance Company in its home office in Hartford, Conn. As adjuster in the Surety Claim Department, my work has included the handling of many contract bond claims involving the completion and settlement of defaulted contracts on all types of construction work throughout the country. This was preceded by 10 years with Morris Knowles, Inc., consulting engineers in Pittsburgh, Pa. We have three boys, one in high school, one in college, and one through college. There are no grandchildren. It was nice to hear from Charley. Bet he is proud of those three boys!"

The sympathy of the Class is extended to the wife and family of Alexander Klemin who died on March 13 at his home in Greenwich, Conn. He was the first director of the Daniel Guggenheim School of Aeronautics at New York University, helicopter editor of *Aero Digest*, and aviation editor of *Scientific American*. Alex designed the first amphibian landing gear used in the United States, and won numerous Army and Navy airplane design competitions. He was the author of several books and his death will be a distinct loss to the world of aviation, as well as to his family, friends and classmates. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

• 1917 •

As we go to press comes the announcement that Ray Blanchard, for 33 years associated with Hood Rubber Company, and since 1932 its vice-president in charge of manufacturing, has been named president of that company. Members of the Class will congratulate Ray upon this well-merited promotion; and also congratulate President John L. Collyer of B. F. Goodrich, of which the Hood Company is a division, upon his sagacious selection of such an admirable character as Ray.

Alfred J. Ferretti, Professor at North-

eastern University, was married on January 25, in Lynn, to Marguerite Diversi of that city. The new address of the Ferrettis is 29 Coolidge Road, Lynn.

Joe Gargan is still working with the Veterans' Administration and is concerned particularly with the increased tuition rates in various educational institutions in Massachusetts, where he occasionally confers with M.I.T. Alumni who are giving their time to eleemosynary institutions. Joe has been suffering from high blood pressure and the return of an old infection that together took much of the joy out of his life for the last year. He is better now and is actively at work. He lives in Brookline, where he voted for Lucius Hill, elected for a five-year term on the housing authority with one of the largest votes collected by any of the politicians.

The unfolding of the M.I.T. Financing Development Program is bringing familiar '17 faces and names to light: Sherry O'Brien was seen gracing the head table at a dinner held in Chicago; Rear Admiral Ernest M. Pace, Jr., added dignity to the head table at a Los Angeles dinner during President Killian's midwinter tour; Ray Blanchard heads the division that will explain the Development Program to Boston corporation officials in a persuasive manner; and several others are equally active in the New England and other areas.

Lobby ran into William P. Bealer at a meeting of the M.I.T. Club of East Tennessee at Knoxville in March. Bill is now a leading architect of Knoxville. Lobby writes: "Bill said he had often thought of writing (to your Secretary) during the last 20 years. I told him that you were accustomed to receive mail without undue emotional stress or mitral palpitations; and that, while I would convey his kindest remembrances to you, I thought it was safe for him to write you at long last. He said he would do so, 'not tonight, but tomorrow for sure.' Tomorrow, and tomorrow, and tomorrow, creeps in this petty pace. . . .

Cy Medding now is not only Colonel Walter L. Medding of Malden, but also First Corps Engineer Officer in Kyoto, Honshu, Japan. He was appointed to this new post in January, and at the same time his son, 1st Lieutenant Walter S. Medding, also of Malden, was appointed engineer of the 46th Engineer Construction Battalion in Fukuoka, Kyushu, Japan. Walter has been with the Army since October, 1917; between wars occupying positions with various engineer units in the United States and Hawaii. In July, 1942, he assisted in organizing the 337th Engineer General Service Regiment at Camp Swift, Texas, and in April, 1943, took them to North Africa, and to Italy in September of the same year. With the Rome Area Allied Command, he entered Rome in June, 1944, and remained there to occupy the city. Returning to the United States in October, 1945, he served as engineer supply officer at Memphis General Depot, Memphis, Tenn., until January, 1948, when he was assigned as chief, Chicago Procurement Office, Corps of Engineers, Chicago, Ill. Walter has a second son, and two daughters.

Colonel and Mrs. Edwin E. Aldrin of Upper Montclair, N.J., have announced the engagement of their daughter, Fay

Ann, to Stanley C. Potter. The prospective bridegroom is with TV Evaluation at the United States Naval Special Devices Center, Sands Points, N.Y. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

• 1918 •

It is always surprising to observe how rapidly some folks age and how slowly others show the passage of the years. In connection with an announcement of his speech before the local branch of the American Chemical Society on how research made possible the production of synthetic crystals for use in electronics and related electrical fields, the Cincinnati *Times-Star* published a photograph of Albert C. Walker which is almost a dead ringer for his picture in *Technique*. There is the same Laughing Cavalier smile, the same hair comb, even the same angle to the camera. You might almost think it was the same picture. But the hair is a little thinner, the necktie is different, and the old saw-tooth Arrow collar has been replaced by something far more comfortable. Walker, as has been reported by your news gatherer previously, works on the Bell Telephone Laboratories' technical staff than which there is reputed to be no than whicher. He came to us from the University of Colorado, and went on, after being with us, to a doctorate from Yale University. Thus, buttressed fore and aft with a university, and filling the sandwich with Doc Lewis (who, incidentally, retires this year) et al., Al has become an authority on synthetic crystals beside being author of numerous publications on electrical properties and moisture content of textiles, methods of drying textiles, humidity control and measurement, polarographic studies on cancer, and statistical quality control methods applied to wearing qualities of textiles. Will you have strawberry or vanilla? — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

• 1919 •

Alexis R. Wiren was responsible for the preparation of a booklet, *Office Workers Manual* which is an outstanding piece of work and should be of great service to those putting it to use with regard to good human relations among office workers. This was published by the Bureau of Business Practice. — Webb C. Patterson has just published a book titled *Bluebird Ballads and Bolts From the Blues* which is offered at \$1.50 to classmates. The author goes under the name of Archie Tech. — Arklay Richards dropped in to see me about a week ago and was very happy with his new married life. Jim Strobridge was in recently, also, and his wife was again in good health.

Frederick A. Parker writes the following from Yokohama, Japan, where he is in foreign service for Standard-Vacuum Oil Company: "Since arrival in New York, December 1, 1943, from Manila by M/S *Gripsholm*, have resumed foreign service with Standard-Vacuum Oil Company. In 1944, went to Australia and India. In 1946, returned to Shanghai and to U.S.A.

Shanghai again and since May, 1948, Japan on loan to Japan Oil Storage Company, as general manager, which handles all U.S. P.O.L. Wife and daughter with me, son at Harvard, maybe M.I.T. afterwards."

J. Pickering Putnam is back at M.I.T. again in the Division of Industrial Cooperation. He flies light airplanes for a hobby. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN C. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

• 1920 •

At this writing, enough returns from the reunion questionnaire have come in to give you positive assurance that this reunion is not to be missed. We are going to have a good gang, the best one yet, and you'll regret it if you don't strain a point to be there. If you're one of those who hasn't returned the questionnaire, won't you help us out by doing so at once. Remember the date — June 9, 10, 11, the place — Sheldon House, Pine Orchard, Conn. Get in touch with the undersigned or with Al Glassett in New York if you have any questions.

Dick Gee is vice-president and sales manager of the Beetle Boat Company, New Bedford. That old sea dog, Ed Rich, is plant engineer of the New York Telephone Company, New York City. Howard Williams is a partner with Fay, Spofford and Thorndike in Boston. Mel Powers, who lives in Bronxville, N.Y., is director of the Evening School of Science and Technology at Pratt Institute. Bob Pollock, who lives in Pasadena, Calif., is electrical engineer with the Southern California Edison Company. Don Dowling is New York district manager of the Roots-Connersville Blower Corporation. Harold Hopkins is in Claremont, Calif., and is district representative of the Penn Mutual Life Insurance Company. Ken Akers is Massachusetts agent for the National Fire Insurance Company. Dolly Gray, living in Wilton, Conn., heads up the architectural sales division of the New York office of the Aluminum Company of America.

Art Merriman, who lives in Cleveland Heights, Ohio, is president of the Brown Body Company of Cleveland and the Gallup-Ruffing Handle Company, Norwalk, Ohio. Ed Howard is district engineer of the Asphalt Institute. Robbie Robillard is export sales engineer for Frigidaire. Lancy Snow, living in Albany, N.Y., is structural engineer for the state of New York Department of Public Works. Johnny Lucas is senior engineer of Ford, Bacon and Davis in New York. Jim Wolfson lives at Rockaway Beach, New York and is vice-president of M. Shapiro and Son Construction Company. W. D. Shepard is vice-president of M. Shapiro and of Wright and Lawrence Laboratories, Inc., Chicago. Fred Zurwelle is president of Zurwelle-Whitaker, Inc., structural engineers, Miami Beach, Fla. Bink Carleton has moved to Clarksdale, Miss., where he is plant manager of the Coahoma Chemical Company. Ed Kendrick is in Succasunna, N.J., and is an engineer with the Picatinny Arsenal. Ken Pope is metropoli-

tan transmission engineer with the New England Telephone and Telegraph Company. Harry Kahn is ceramic engineer with the Architectural Tiling Company, Keyport, N.J. Fraser Moffat is director of export for American Cyanamid Company. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

For Saul M. Silverstein, for Manchester, Conn., and its environs and for the national banking scene, February 25 marked an eventful day which saw the formal opening of the First National Bank of Manchester. Heralded as "The Friendly Bank" in Hartford and Manchester newspapers, the organization of the new institution was started about a year ago by a group headed by Saul and Willard Rogers of the Bond Hotels. Saul is vice-president and a director of the new bank in addition to his duties as president and general manager of the Rogers Corporation of Manchester, fabricators of paper and plastic materials. On its opening day, the bank had some 300 stockholders and deposits exceeding a million dollars. Chartered by the government and a member of the Federal Reserve System, the Federal Deposit and Insurance Corporation and other banking and security groups, it offers 35 different banking services, including a drive-in teller's window and the most modern banking house and equipment available.

Ray St. Laurent sent the bank's booklet and a number of illustrated clippings of the event, showing Saul at the ribbon cutting ceremony. A reply to Saul's cordial invitation to attend the opening brought the response from him that: "March of this year marked the 20th anniversary of my moving to Manchester, although I did spend two years here prior to 1930 in a consulting capacity as director of the Industrial Research Division of Bigelow, Kent, Willard and Company of Boston. In addition to Rogers Corporation and the bank connection, I am chairman of the Manchester School Building Committee (on which Ray comments: "What a swell job he is doing!" — Cac) and we are completing the first phase of a seven-million-dollar program involving three elementary schools, a junior high school and a senior high school. The first third is completed, the second is in progress and the balance should be finished by September, 1954. I have relinquished my duties as director of the local Y.M.C.A. and have curtailed activities at Temple Beth Shalom where I was president for 11 years and am still taking care of some projects as honorary life president. Currently, I am called upon to make quite a few addresses dealing with schools and labor relations. Lee, who is 20, seems to be squared away at Boston University and Phyllis, now 18, is headed for Wheaton this fall. Barbara is 16 and two years away from the university problem. Rigi won't tell me how old she is but I am doing a pretty good job of aging her with these extra-curricular activities, making home life comparable to the information booth at Grand Central Station!"

Arthur E. Raymond, Vice-president in charge of Engineering of the Douglas Aircraft Company, Santa Monica, Calif., was

the recipient of an honorary fellowship of the Institute of Aeronautical Sciences, the highest award given by the organization. Presented at the 18th annual honors night dinner in New York, the fellowship is the 22d such honor conferred by the Institute, of which Arthur is a former president and S. Paul Johnston is now the director. Arthur is well known for his contribution to the development of the world famous DC-2, DC-3, DC-4 and DC-6 airliners and his citation for the award covered his work in the field of research and in the interest of the aeronautical sciences in general. In 1946, President Truman made him a member of the National Advisory Committee for Aeronautics. *Electrical Engineering* for March announces that Lawrence B. Richardson, formerly a rear admiral, Bureau of Aeronautics of the United States Navy, has been named director of research of the Fairchild Engine and Airplane Corporation. Larry is the holder of the Legion of Merit and was made a commander of the Order of the British Empire. Albert B. Alsos has been elected city manager of Sylvania, Ga. He was formerly director of construction for the Southern States Iron Roofing Company in Savannah, Ga.

Daniel Noce, a major general, sent a most welcome letter in response to our note about his overseas assignment. Members of the Class who attended our 25th reunion will remember with considerable pleasure his participation with Stanley L. Scott, also a major general, and it is to be hoped that the services will be well represented come June 11, 1951. Writing from Europe, Dan says: "I am glad to know you are setting up the 30th reunion and wish I could tell you there was a chance that I might attend. I wish you every success in rounding up a group of classmates and, if you have an opportunity, extend my best wishes to them. I was transferred over here on the normal change of duty orders and am chief of staff of the United States Army, Europe, of which Lieutenant General Huebner is in command. I am also vice chief of staff of our joint command, which they call European Command, of which General Thomas T. Handy is commander-in-chief and General Huebner is chief of staff. This is a very interesting station, a very interesting theater and, of course, a very critical time. All of you can be glad that M.I.T. is not restricted for space or facilities the way these German universities are. I live just a few blocks from the Heidelberg University; in fact, my house overlooks the town and the university is just down the hill a little way from my lookout point. The difference between our system at home and the system here is great. You sometimes marvel at the scientists they turn out here for the poor facilities and equipment available to them."

Don G. Shingler, a brigadier general, also sent a most interesting letter in extending his regards to the Class from a new post. Don writes: "My change of address stems from the fact that I am again back in the United States after completing my three-year tour as chief engineer of the European Command with headquarters in Heidelberg, Germany. From the banks of the Rhine, I seem to have jumped to the banks of the Mississippi, as

division engineer of the Upper Mississippi River Division, Corps of Engineers, with headquarters in St. Louis. I hope I can continue to report a well-behaved river down to the end of my jurisdiction at Cairo. Last summer I carried the ball for the United States' side in a Congress of the Federation of Associations and Societies of French Engineers held at Constance. In the tri-lingual conference were representatives from most of the western European countries. It was interesting to observe in the discussions on education of engineers that I found strong support for the M.I.T. way from several foreign engineers who had either attended or visited the Institute before the war. You may recall that the outbreak of war caught me in Baghdad, without a magic carpet. For two years, I literally sweat out some interesting wartime work on railroad, highway and port development in Iraq and Iran. This, and my subsequent assignments in Europe, make me appreciate my present opportunity to take a refresher course in the American ways of life. I am looking forward to a pilgrimage to M.I.T. to determine firsthand the accuracy of the glowing reports about the institution and personnel as presented in *The Review*. Notice has been received that Leland H. Hewitt, a colonel, Corps of Engineers, has been assigned to Fort Clayton, Canal Zone. Mark L. Ireland, a colonel, has returned to a Washington address and Girard B. Troland, a colonel in the Corps of Engineers, has been transferred to Houghton, Mich. Roy Green, formerly a lieutenant colonel, has joined the ex-brass division and is now in Bound Brook, N.J.

John T. Rule, Professor of Drawing and Descriptive Geometry and Head of the Section of Graphics at the Institute since 1938, has been appointed by President Jim Killian '26 to be the chairman of the courses in General Science and General Engineering and Head of the Department of Course IX. Jack, who will continue to administer the Section of Graphics, will succeed Professor Ralph G. Hudson, who has been in charge of the courses since 1932 and who will retire next July with the rank of professor emeritus. A native of St. Louis, Jack was graduated from the Central High School there and received his bachelor's degree in Course XV with our Class. For a year he carried on special studies at Harvard. He has had five years' experience as a consulting engineer and has held several industrial posts, including two years as industrial engineer in charge of construction at the St. Louis plant of the Curtiss Wright Corporation. He later became head of the science and mathematics department of the Taylor School in St. Louis. He joined the staff of the Institute as assistant professor of drawing in 1936 and two years later was promoted to the rank of associate professor of drawing and descriptive geometry. He was made a professor in 1947. Jack is known for his research and development in three-dimensional vision, including stereoscopic drawings, photography, motion pictures and general theory. He did most of his wartime research with the Polaroid Corporation and was in charge of the development of the Mark I gun trainer for the United States Navy. He was also associated with other war projects, chiefly with

the Bureau of Ordnance. Jack is married and he and Mrs. Rule have three sons and a grandson. He has always been active in Institute affairs from undergraduate days when he was an associate editor of *Voo Doo* and a member of Corporation XV and the Chemical Engineering Society up to the present when he serves the Class as a member of our War Memorial and Secretarial Committees. On the Alumni Council, Jack represents the M.I.T. Club of Central Ohio. To him from all of us, sincere congratulations and good wishes.

Victor O. Homerberg, who served on the instructing staff of the Institute for 31 years, has resigned and is living in Hope Ranch Park, Santa Barbara, Calif. Vic started as a student assistant in the Chemistry Department in 1919 and later became an instructor. He received his bachelor's degree in Course X with our Class and his doctorate in Course III in 1927. He has been engaged in teaching metallurgy since that date, most recently as professor of Physical Metallurgy. He has published many papers, particularly on the nitriding process. Already a confirmed Californiac, Vic writes: "I resigned from M.I.T. after the first semester and moved to Santa Barbara in order to miss the worst part of the winter in Cambridge. I am a chronic sufferer from sinusitis and was advised to get away from New England weather. My hobby is gardening and I have been working at it every day here since January 16. The natives are fully justified in claiming the climate to be the best in the country. I have not had a trace of sinus trouble since we arrived. We have a ranch type home all on one floor in an ideal location. We overlook an immense valley with a superb view of the mountains. From our patio we can see the Pacific. Over an acre of land, mostly in fruit trees, vegetables and flowers, keeps me busy. I have not abandoned my professional work. I have three consulting jobs which, with my garden, keep me fully occupied. This is really living and Mrs. Homerberg and I are very happy that we made the move. I hope that any of our classmates will call on us when they come this way." We have received a very cordial note of thanks to the Class from Professor Emeritus Dugald C. Jackson and Mrs. Jackson in acknowledgment of good wishes on the occasion of Professor Jackson's 85th birthday in February.

A. Abba Orlinger, New York patent attorney, phoned that he and Fred Binns of the Virginia Smelting Company were the 1921 representatives at the M.I.T. luncheon during the recent New York convention of the Technical Association of the Pulp and Paper Industry. Fred reported he now has five grandchildren. Abba also saw Eugene A. Hardin, project engineer of the Bureau of Engineering of the Philadelphia Department of Public Works, where he is concerned with water supply problems. William L. Knoepke reports that he is living in Short Hills, N.J., and Everett J. Wilson has moved from Swampscott to Melrose, Mass. Laurence O. Buckner has a new home address in York, Pa., and Samuel T. Drew now resides in Coral Gables, Fla. New addresses have also been received for Angelo O. Festorazzi, Harold A. Greenwald and Llewellyn B. Griffith.

The Reverend Everett R. Harman, M.A., A.I.A., completes a trio of the Class among the clergy, together with the Reverend William F. Hastings of the Union Church of San Juan, Santurce, Puerto Rico, and the Reverend Williston Wirt who has a pastorate in Berkeley, Calif. Writing on the stationery of the Cathedral of the Madeleine of Salt Lake City, where he is assistant pastor, Father Ev says: "I suppose that I am not the only one who feels that we have missed the boat in the field of 'human engineering,' a term that I am beginning to hear used more often to refer to the need for 'designing' or adjusting men so that they can live together without fighting or hating each other. Most people use the term in a loose sense, but I wonder why we can't go a much longer way to discover 'sciences' of adjustments, based upon the necessity of loving others instead of self. The math of statistics and measures of central tendencies give us something to start with, but too many overlook the greatest source of religious information in the world. I am kept very busy and enjoy my work. I get in considerable time, as a member of the building committee for the diocese, on serving local needs in church design and architecture. Recently I met some M.I.T. men at an American Institute of Architects' dinner here for our National President, Ralph Walker '11. The chapter had asked me to give the invocation. At Christmas time I met Bob Campbell '42, an M.I.T. man here who is studying for the priesthood at Canon City, Colo. Please give my regards to all my friends."

John W. Barriger's Chicago, Indianapolis and Louisville Railway Company scored an engineering triumph, as reported in February issues of *Railway Engineering and Maintenance* and *Railway Age*, for a novel and inexpensive method of dismantling a bridge carrying the Monon across the Wabash River near Delphi, Ind., and installing a larger modern type of structure, utilizing the original piers along with some new ones. The entire project was carried out under traffic and at a cost estimated to be one-tenth that of a new bridge on a new alignment.

P. Exton Guckles has moved the headquarters of his Philadelphia Yacht and Aircraft Agency to the Wallace and Warner Building on the Lincoln Highway in Bryn Mawr, Pa. Ex writes: "The yacht brokerage business continues the same as my last report and I continue the same except a few years older and now a grandfather. It may be news to report that I have recently purchased an interest and am president of the Passmore Lumber Company of Camden, Maine. I spend part of my time here and part there."

Maxwell Murray, a major general and the first of the Class to reach that rank, died at Siasconset, Mass., on August 4, 1948, and was buried at the Arlington National Cemetery, according to advice just received by the Alumni Office. Born at West Point, N.Y., and the son and grandson of generals of the United States Army, he was graduated from the United States Military Academy. He saw service in World War I as colonel and commander of the 5th Field Artillery, First Division, and was awarded the Distinguished Service Medal for action at Cantigny, Soissons

and on the Aisne-Marne offensive. Following his assignment to M.I.T. for Course II with our Class, he served in the Office of the Chief of Field Artillery and was then graduated from the Command and General Staff School and the Army War College. He had various commands and an assignment in Manila as assistant to Governor General Dwight F. Davis. Early in 1941 he became commandant of the Hawaiian Division and in 1942 commanding general of the Southern California Sector. From 1943 to 1946, he was commanding general of Forces at New Caledonia in the South Pacific. He was retired September 30, 1946, as a major general. His decorations included the Silver Star and the Croix de Guerre with Gold Star. He is survived by his wife, Mrs. Phyllis H. Murray of Washington, to whom sincerest sympathy is extended on behalf of the Class. We are indebted to the Adjutant General, Major General Edward F. Wittsell, for supplying General Murray's biography.

Relax and reminisce after the Alumni Day activities and before the banquet at our annual class party to be held on Monday, June 12, 1950, at the Copley Plaza, from 4:00 to 6:30 P.M. — CAROLE A. CLARKE, Secretary, International Standard Trading Corporation, 67 Broad Street, New York 4, N.Y.

• 1922 •

Excellenza L. Morse of our Class is the first woman to be appointed primary examiner in charge of an examining division of the United States Patent Office. Miss Morse, a native of Leicester, Vt., has been an examiner in the Patent Office since 1925, steadily moving upward from the position of junior examiner to her present place at the head of Division 65 which is concerned with inventions relating to batteries, electrical connectors, conductors and insulators, and illumination.

We are sorry to have to report the death of William E. Daley who died in his 53d year at the Wilmington (Delaware) General Hospital after a long illness. Following his graduation from Technology, he was with the Illinois Highway Commission until 1926. He then spent a year with the Pennsylvania Highway Commission, followed by a period with Joseph Driscoll and Sons, Inc., in Brookline, Mass. In 1936 he went with the Du Pont Company, being first stationed in Buffalo until 1939 when he transferred to Wilmington. He leaves his wife, the former Agnes M. Cooper of Hudson, N.Y.; two sons, William Edward, Jr., and Edward M.; and one daughter, Anne Margaret. The sympathy of the Class is extended to his family.

Lewis P. Tabor, senior research engineer in the Franklin Institute Laboratories for Research and Development in Philadelphia, has just been elected chairman of the Institute's Science and Arts Committee which is responsible for choosing the scientists to whom special Institute medals are awarded each year. Tabor will be the 66th chairman of this committee since it was originated in 1835. After his graduation from M.I.T., he did graduate work at the University of Pennsylvania in physics,

mathematics and electrical engineering. He headed the Science Department of Episcopal Academy for many years, following which he joined the staff of Cook Observatory in Wynnewood, Pa., where he designed a precision electronic telescope clock and a photoelectric densitometer. In 1942 Tabor was with the Radiation Laboratories at M.I.T., and from 1943 to 1946 he was chief of the development subsection of the guided missiles section of the Board of Ordnance. He was a member of the Guidance and Control Committee for the Chief of Naval Operations and also for the Joint Chiefs of Staff. He returned to civilian life with the rank of commander, U.S.N.R. He then went to the University of Pennsylvania in 1946 as research assistant professor of electrical engineering where he was in charge of guided missile study and the design and development of digital computers. At the Franklin Institute Laboratories, which he joined in 1948, Tabor directs miscellaneous electronic problems involving electronic computation and simulator work; simulation and graphical computation methods for the study of traffic control problems; and studies the various factors in evaluating proposed systems of air traffic control to prevent accidents. He is also a member of the American Physical Society and the American Institute of Physics.

Donald F. Carpenter, recently head of the Munitions Board, has returned to the Du Pont Company to become general manager of a new department that will supervise research, production and sales for all products currently handled by the Cellophane division of the Du Pont Rayon Department. The February issue of the *M.I.T. Development Program News* includes pictures of Development Program Dinners in which are found L. Emerson Spear, dinner chairman of the Los Angeles Dinner, and Mrs. Edward A. Ash, wife of our classmate Ed Ash who has been working so diligently in the Detroit area.

The Alumni Office has new addresses for: Thomas P. Wynkoop, Harold D. Stanley, Robert P. Russell, Reginald B. Parkhurst, E. Russel Baldridge, Henry R. Haines, Adrian J. Gilardi, and Ray C. Burrus. — C. YARDLEY CHITTICK, Secretary, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, Assistant Secretary, 333 Ellicott Street, Buffalo 3, N.Y.

• 1923 •

Don't forget the meeting of the Class scheduled for five o'clock on Alumni Day, June 12, at the Copley Plaza, prior to the Alumni Day dinner.

In response to the invitation in a recent set of class notes, Herbert L. Hayden, 7 Wellesley Road, Upper Montclair, N.J., has offered to look after class pictures and films. He will try to get together for each reunion such films and other pictures as may be available. Members of the Class who took any shots at any of the previous reunions should send to Herb a print of what they have. It is also suggested that you send to him any interesting still pictures and he will start a collection of these. A good many individual members of the Class took such pictures

and may have made them up into films. Some may agree that the best place for such films is in Herb's hands. I hope there will be a generous response from this suggestion so that by the 30th reunion a considerable number of films can be assembled, showing the highlights in class events from graduation on. Send the prints, either still or movie, to Herb at the above address.

Jack Keck called to my attention the fact that in February Roy G. Rincliffe was elected a director and an executive vice-president of the Philadelphia Electric Company. Rincliffe joined the Philadelphia Electric organization in 1923 and has held various positions, including superintendent of gas manufacturing, purchasing agent, manager of electric generating stations and vice-president in charge of electric operations, the position he has held since 1945. He is a native of Sandusky, Ohio, and a graduate of both Yale and M.I.T.

I had a nice note from Norman Weiss, who is milling engineer of the Western Mining Department, American Smelting and Refining Company at Salt Lake City. He reports that John Duffus Weiss, his oldest son, was married in El Paso on December 2 to Nancy Kuhn, daughter of Mr. and Mrs. Ralph Stallings of El Paso. He reports that he and his wife, Mary, had been to the wedding, the latter slightly subdued as the result of an automobile accident that occurred earlier in the day. It seems that his son Jack's car, in which his mother was riding, was hit by a truck, throwing her out of the car onto the pavement. Luckily, only bruises resulted. His younger son, Norman David, is at an Air Force Base near Tucson. Of further interest, Weiss says that on occasional trips through Denver he has an hour or two with John Flaherty who, he says, is always happy to get some free time from the many women in his life: Eileen, his charming wife, and daughters, Kathleen, Mary Ellen and Maureen.

I have two deaths to report. Frank R. Hassler of Kirkwood, Mo., died on January 31. On Hassler, I have no further particulars. Breese J. Stevens died on March 1, after a long illness, at Camp Hill, Pa. He had been employed by the Bell Telephone Company. He is survived by his wife and two sons and a daughter. — HORATIO L. BOND, Secretary, National Fire Protection Association, 60 Battery-march Street, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

• 1924 •

LOOKING BACKWARD. Spring at last! Remember what you were doing as other Mays rolled around? Here are a few refreshers. In our freshman year the Southern Club was holding its big spring musical revue and dance. Star performance, a slack-wire act by that old Southerner from Long Island, Ted Kenyon. Russ Ambach scored in four events in track meets with Andover and Worcester, was immediately elected captain of the team. And the Intercollegiate Prohibition Association dined at Tremont Temple, dis-

• 1925 •

cussed International Prohibition, received the blessing of the T.C.A. Wink Quarles was very active in the latter organization. That was 29 years ago. We were much younger then!

One of the difficulties in publishing any sort of directory is the fact that a lot of the information becomes obsolete as soon as it's published — sometimes before. Take the business of progeny, for example. We told you last month about the impending arrival in the Parker family. Now, unless our underground is in error, the Correales are also expecting. And in the matter of addresses, there is a constant stream of changes. Stanley Fosgate, previously listed in Coral Gables, is with The Keyes Company in Miami, Fla. Norris Johnston, one of our several oil men, is now in Montebello, Calif., president of Petroleum Technologists, Inc. Frank Moore has left Florida for the nation's capitol, is living in Arlington, Va. Calvin F. Reed, who was lost entirely last year, has turned up as manager of Armour's Brazilian Branch in San Paulo. With Dolph Santos there's the makings of a '24 club. And one of our Japanese classmates has been located. He's Tamio Kasa-hara, a miner, who is still in Tokyo, though at a different address than our 25-year report shows. Maybe that address no longer exists!

The Alumni Association's peripatetic Executive Vice-president, H. E. Lobdell '17 has just returned from a flying trip to Mexico. He saw Nish Cornish while there. Nish will be back this spring to see his son graduate from the Institute and to visit his new home office (Remington-Rand). But the feature of Lobbie's trip was a big dinner of the M.I.T. clubs of Mexico, principal speaker, "*el señor* John Fitch, *jefe de la rama de ingenieria del Banco de Exportacion e Importacion de Estados Unidos.*" Said *el señor* Fitch: "Net authorized credits to Mexico have amounted to \$148 million dollars." The audience cheered. Other distinguished guests, the American and Canadian ambassadors, the Mexican Minister of Hydraulic Resources. Toastmaster, Thomas M. Nevin '24 — Jack is president of the M.I.T. Club of Mexico. Incidentally, maybe you don't realize what other '24 men are also club presidents. Mike Amezaga heads the Havana Club (with Tony Rosado as his V.P., for good measure); Phil Bates runs the Los Angeles branch; and H. H. Houston presides in Seattle.

On May 31, Colonel Morris K. Barroll retires after 37 years of duty in the Army. He was with us as an Army Ordnance student. For the past three years, the Colonel has been commanding officer of the Springfield (Mass.) Armory.

Next month, Alumni Day, Monday, June 12. Banquet at the Copley Plaza. Prebanquet get-together of all '24 men and their wives, also in the Copley. See ex-TCAer Quarles in action; hear Vitamin King Cardinal, the Father of the Class, swap Success Secrets with Parker and Correale, contenders for the title; test Pret Littlefield's current products; maybe even rub elbows with *el señor* Fitch. Make it if you can. — HENRY B. KANE, General Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

Time for making arrangements to attend the reunion is getting very short. If you have not already made your reservations, please send them in. It appears that we have everything necessary for a bang-up reunion. The location, as far as we know, cannot be improved upon. The program being arranged under the direction of Ken Robie is excellent and the group that is planning to attend just tops off the rest to guarantee a grand time for all of you who attend. The assistance that has been given your reunion chairman by members of the Class has been excellent. You have already received a list of those who have been actively engaged as committee members. Many more than I can mention have been active to the point of writing and telephoning members of the Class endeavoring to give us a large turnout. I have had letters from Charlie Boardman in Pittsburgh, Henry Sachs in New York City, Jim Woodward in Hartford, and Herb Taylor in Chicago. All of them have indicated that they have been in touch with several members of our Class. If you can possibly make the reunion and if you have not made your reservations, get in touch with any member of the committee as soon as possible.

Your Assistant Secretary finds that handling the planning of a reunion has some advantage; particularly that of receiving an occasional letter from some member of the Class who has been silent for some time. A letter was recently received from William J. Schwarz, owner of the Cincinnati Gold and Silver Refining Company of Cincinnati, Ohio, a firm that was established in 1880. He started out with the Class of 1925, taking Course XIV, but did not stay with us until graduation. However, he still feels a strong attachment to M.I.T. and the Class of '25; and if any of you are in Cincinnati, I am sure he would appreciate having you call on him.

We have also received a fine letter from Masaru Kametani, II, Tokyo, Japan. Upon his return to Japan after graduation, in February, 1926, he entered the Mitsui Gomei Kaisha (Mitsui Holding Company) and worked in the construction of the Mitsui Main Building with American engineers from the James Stuart Company of New York as the contractor, and Trowbridge and Livingston as the designer. After the completion of the building, he worked for the building management including the operation of the air-conditioning system and Otis elevators. In February, 1939, Kametani was transferred to the Fischer Synthesis Benzine Plant Installation section of the Mitsui Mining Company, and in July was sent to Kinshu, Manchuria, to install a plant there. He finished the first unit of the plant in September, 1945. Just at that time, Japan surrendered, August 15, 1945. In the meantime, the Soviet Army, Communist Army and the National Army occupied the plant, and then the entire plant was taken over by the Chinese Government. In order to operate the plant, he was detained until October, 1946. After his release, he sailed from Koroto on October 22, but because of disease on board the ship was detained for 43 days at Kiska Port. He was then released on De-

cember 3 and came back to Tokyo on December 6, 1946. Since then, he has been with the machinery branch, industry division, ESS, GHQ, SCAP, as a technical advisor dealing with the Japanese Government, industrial machinery makers and coal mine operators to rehabilitate the coal mines and machinery makers. In September, 1949, Kametani was elected president of the M.I.T. Association of Japan. He would like very much to get on to the reunion but that will be possible only in case he obtains transportation from some agency in Japan.

The first president of the Class, none other than Glen L. Bateman, was in Cambridge for a few hours the latter part of February. Unfortunately, none of us in the Class had a chance to see him.

At this point, your Secretary is taking over with some news from Washington, D.C. A clipping from the Boston Sunday Post describes the latest work of Mary Morrison Kennedy, IV, in the form of the redecoration of the Daytona Sheraton Hotel; Mrs. Kennedy is consultant decorator to the Sheraton Corporation of America, the owner of the hotel. A brief quotation: "The cool pleasing greens of grass, trees and ocean, which create a beautiful setting for the Sheraton Plaza, supplied the main color theme for the new decorations. Varying shades of green, with bright colored accents have been used primarily." — In the papers of Monday, February 6, appeared a news item relating to a warning by a committee of 12 physicists that this nation could not afford to start an H-Bomb race. This committee, headed by Dr. Hans Bethe of Cornell, included Ken Bainbridge, VI-A, Professor of Physics at Harvard. This meeting, and the committee's statement, has been widely publicized, so I shall not repeat it here. But I do wish to register my admiration for the courage of Ken and the others of the group in thus risking condemnation for their stand. I believe that it was a completely unselfish and patriotic act.

Your Secretary now asks your indulgence while he reports a bit of family news. My daughter, Martha Valentine, was married at a private ceremony on Saturday, March 4, at Medford, Mass., to Horton Randolph Shaw '49, XIII, the son of Mr. and Mrs. E. P. Shaw, III, of 12 French Street, Quincy, Mass. For the benefit of any '49 men reading this '25 column, Horton is now employed by the Marine division of the Cities Refining Company, at their offices at Wall Street, New York City. — HOLLIS F. WARE, General Secretary, 106 Schuyler Road, Apartment 206, Silver Spring, Md.; F. LEROY FOSTER, Assistant Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

Here's a letter from Gardner, Mass., that I am going to start off with this month and when you read it perhaps you will guess why: "I got quite a kick reading the Class of 1926 notes for the month. Your attempt to get the boys to give you some news so that your report could be of some size is good. Time will only tell how well it works. I am listed with the Class of 1927, otherwise I would try to help you out some time." (I hope no '27

man is looking or I will be accused of poaching, but Roger's class affiliation has been changed to '26.) "Are you around the office every day? I come in town frequently and would like to buy you a sandwich and cup of java. How are you and your wife? My family are all fine. Sincerely, Roger Smith." Thanks a lot, Roger — I mean for the sandwich and java you are going to buy for me.

Now that we have demonstrated that we can reach outside the Class of '26 for notes, I'm going to spring another idea by addressing the wives of members of the Class of '26. Where did I get this idea? Well, the other morning our switchboard operator announced that someone who called himself "Old Man Martin" was outside and lo and behold in walked Ronald Martin. He started off by saying that his wife had often told him that he must sit down and write George Smith something for the class notes; and as a result of these reminders, he decided to pay me a visit while in Boston. Thanks, Mrs. Martin, for sending Ronny around and also for the tip — I had not realized that wives were reading the notes. Now if the rest of you nice wives will just take that big '26 man of yours by the ear, lead him over to his desk and hand him a pencil and paper, then your poor Class Secretary is going to have a new worry — what to do with *all* the notes. To get back to Ronny Martin — he is superintendent of power for two rayon plants in Elizabethton, Tenn., North American Rayon and American Bemberg. It sounds fantastic but these two plants generate their own power economically right in the same town where the latest T.V.A. dam is located. As a matter of fact, Ronny invites any '26 man so inclined to come fishing with him behind the dam after June 1. Ronny is vice-president of the local Chamber of Commerce; has a daughter who is a freshman at Simmons College; and still thinks New England is a pretty nice place.

A few weeks ago your Secretary attended a meeting of the Technical Association of the Paper and Pulp Industry in New York and, during the presentation of a technical paper, spotted Lawson Peakes in the audience. Between papers, I dashed over and said, "Hello Peakes." He said, "Hello Smith," and we were again lost in the shuffle. I can report that he looked very well, however.

Last month you will recall that I mentioned having received a nice letter from George Breck who is with Thomas A. Edison, Inc., and apparently has the ready use of an Ediphone which gives him some advantage when it comes to writing notes. (I'm grinding these out longhand tonight!) George has sent a most interesting story about the Edison Company: "I have read with interest in The Review about your appointment as class secretary for 1926. Also, it would be difficult to overlook your appeals for news of the Class which are sprinkled through your class notes." (Take heed — G.W.S.) "I don't recall having broken down before to send news to a 1926 class secretary; but after 24 years of neglect, it is time that I got busy. But first a word of appreciation for the very interesting and lively news you have given us since you took

over. It certainly continues in fine style the standards of our previous, illustrious Secretary. As regards my own activities, after reading your account of all of the corporation presidents, general managers, chief engineers and owners of their own companies, who are among our Class, I wonder why my activities would interest you or other members of the Class. Because this is my first letter to the Class Secretary, I shall review briefly what I have done since 1926. I started off with a couple of engineering jobs in the radio field in the Boston area but activity in the radio field near Boston was rather light and I found difficulty staying in this line. However, through the M.I.T. Employment Bureau, I landed a commercial job in New York with an exporting company handling radio materials and put in a number of years there in sales engineering, correspondence and specification work. The advent of World War II brought a tremendous demand for engineers and I started back in this field, in the electronic line this time, at first with Raytheon, later with Federal Radio and finally with Thomas A. Edison, Inc., in West Orange, N.J., with whom I have been connected for a little more than four years and it is about this interesting company that I want to tell you. There are a number of divisions here at Edisons and I happen to be in the Ediphone division, doing engineering work on dictating machines. This division was founded on the basis of one of Thomas A. Edison's most important inventions and is one of the largest divisions. Many people picture Thomas A. Edison, Inc., as having a tremendous research laboratory, which carries on where Mr. Edison left off when he died in 1931 and I, too, had this picture of the company when I first came here. This, however, is an inaccurate picture because research on a large scale, as was conducted by Mr. Edison, on a pure research basis, was practically discontinued when he died. The manufacturing end of the business was large at the time of his death and has been carried on in much the same form since. Besides the Ediphone division, we have the Nickel-Iron-Alkaline Storage Battery division, based on Mr. Edison's invention of this type of battery. We also have the Primary Battery division, which also dates from way back. Our Automotive division is a more recent development and is not founded so basically on Mr. Edison's inventions. It manufactures the regular lead type of automobile storage battery. Another division is the Instrument division, which is an outgrowth of World War II manufacturing aircraft instruments, and other instruments. We also have a Wood Products division in Wisconsin making juvenile furniture and a Medical Gas division in Stuyvesant Falls, N.Y. We still have a Central Research Laboratory at the disposal of all divisions for basic research which takes over complex and specialized problems from individual divisions or engineering departments. It also does basic research in product development for any of the divisions. In recent years, the research department has developed some very valuable products, which are now being manufactured by the various divisions. It is interesting to note that

the original buildings of Thomas A. Edison's Research Laboratory have remained intact, without change, since the time of his death. One can still roam around in some of these buildings, under supervision and guidance, and run across working models that he was developing. A group of men have been collecting and preserving the original models of Mr. Edison's inventions and many are on display in these buildings. Others are packed away in a bomb-proof vault here on the property. Mr. Edison's papers have also been carefully collected, cataloged and filed in the vault. Recently, a new organization, the Edison Foundation, has taken over the original buildings and properties for the purpose of using the properties and the magic of Thomas A. Edison's name, to promote the greatest good for the future of this country. The old buildings are used as a museum for the public to visit and learn of Edison's work and receive inspiration and certain educational programs of meetings and speeches are conducted for the general welfare. Certain scholastic work will be sponsored by the Foundation and it also plans to promote programs which will assist in the development of original research, by which Mr. Edison accomplished so much." It certainly is interesting to learn about the Edison organization and many thanks, George Breck, for your nice contribution to the '26 notes this month.

I recently had some Class of '26 post cards printed; and in order to find out how good they were, I sent one to our Class President, Dave Shepard, and received a nice answer indicating that the cards must be O.K. I'm going to finish this month's notes by quoting Dave's letter: "I am very impressed that your request for a note from me was written at 6:55 A.M. on a Monday. This seems to me to be an indication either that you had had an extremely healthy week end or that you were up mighty early that morning in order to get from your house on the Cape to the office. I am not so impressed by your notation that the temperature was -2 degrees F. because I have just today gotten back to my office after a week of skiing near Franconia and at 6:55 A.M. one of those mornings I am told it was -20 degrees F. At that time, however, I was horizontal under a suitable number of blankets and I am glad to say I cannot give you a firsthand report. I am now somewhat less confused than I was at the start of my new job last October. My new work is being most interesting and the whole Shepard family enjoys being back in the United States after about 15 years of interesting stations abroad. Pink Salmon and I had lunch together on one of his recent visits to New York and I have seen George Leness once since my return. I am hoping that I may catch up with a lot of others in the Class now that I no longer hang my hat 3,000 miles from New York. I see Sparky Turner frequently since we are both in the same office here and we were several years together in Jersey's London office." (I'm glad to know where you are, Sparky — I addressed you in London recently through the notes.) "Bill Sessions took time off the other day in Cleveland to send me a clipping containing some ex-

tremely high-class puns. I hope to be able to have a discussion with him about that since he said it made him think of some of the pain he had when he was my roommate. One of the nice things about being back in the United States is that I shall have better chances of being able to show up at the 25th reunion and I look forward to that. Please give my best to classmates you see." Thanks, Dave, and I speak for the entire Class when I say that we are extremely happy to have you back in the United States once again. **GEORGE WARREN SMITH**, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., Room 1420, 140 Federal Street, Boston 10, Mass.

• 1927 •

The Townsman, Wellesley, Mass., announced the marriage of Francis J. Crandell to Dr. Alice M. Broadhurst on February 8 at Our Lady of Mercy Church in Belmont. Dr. Broadhurst was graduated from Radcliffe College and Tufts Medical School. — A recent note from Paul B. Gebhardt, who is now in Baltimore, informs us that he has located in Maryland to serve more advantageously several of the firms he represents as a sales-engineer in the east.

Lee McCanne, Vice-president of Stromberg-Carlson Company, was recently installed as the 60th president of the Rochester, N.Y., Chamber of Commerce. "In his inaugural address, Mr. McCanne characterized himself as a 'realistic optimist with an engineer's training who likes to sell.' He predicted that business would be good throughout 1950, counting on good labor relations, a continuation of productive know-how for cost reduction, and a return to aggressive selling. Production, he added, would not be limited by scarcities of any important materials." *The Times-Union* salutes him for his leadership in industry and for his efforts on behalf of civic betterment in many fields and for following in the footsteps of his father, the late W. Roy McCanne, as both president of the Chamber and as an executive of the Stromberg-Carlson Company.

J. E. Gill informs us that he is moving his home to Puerto Rico and can be reached in care of the Gill Leather Company, Caguas, Puerto Rico. Just as soon as he is settled, he will send us more news about his work there. A recent announcement from Behre Dolbear and Company informs us that Parke A. Hodges is now located at 11 Broadway as vice-president with that company, which acts as mineral consultant in mining, metallurgy, geology and management. Good luck, Parke!

The Worcester Academy Bulletin of February, 1950, announces with deep regret the passing of Ralph P. Robinson on December 18 at Worcester City Hospital. We also regretfully announce the passing of Paul C. Springer of Lincoln, Maine, on March 6. — **JOSEPH S. HARRIS**, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York, N.Y.

• 1928 •

William Beard, XI, who is now living in Altadena, Calif., recently visited Boston on business and called at M.I.T.

while here. Bill served in the War as a private. He was drafted in March, 1945, and served out his tour of duty in the Ozark Mountains, being discharged in September, 1945. Bill has two children, a boy 11 years of age and a girl eight years of age. As an avocation, he pilots his own plane in various sections of the country.

Ralph T. Jope reports of a very pleasant evening spent in Corning, N.Y., with Tom Wood and Warren Fleming, both of whom have been associated with Corning Glass Works for a long period of time. Tom is in charge of the bulb sales and Warren is in charge of the instrumentation division of the engineering department. Both are looking forward to coming back to the 25th reunion. — **GEORGE I. CHATFIELD**, *General Secretary*, 49 Eton Road, Larchmont, N.Y.

• 1930 •

Two Course XVII men were in the news recently. Reg Bisson, whose construction firm is located in Laconia, N.H., has completed the second of three yearly courses to fit senior reserve officers to take over duties as divisional staff officers in the event of an emergency mobilization. Paul Blouin of Meriden, Conn., has been appointed to the board of public works of that city, where he is district engineer for the Lane Construction Company. Al Luery is now with the Celutex Corporation in Chicago. Jim Winterbottom has been transferred from Gulf Oil's Boston office to Pittsburgh. — Word has been received of the death of Paul Keough of Fitchburg, Mass., on September 6, 1949. The sympathy of the Class is extended to his family.

Jack Latham has been nominated for the position of vice-president of the Alumni Association. He has been on the executive committee for two years and is in charge of the Alumni Day Dinner at the Copley Plaza on June 12. Since the 10th and 11th of June will find a large number of you at our 20-year reunion at Riversea Inn, Saybrook, Conn., we hope you will include Alumni Day in a long week end of good fellowship! — **PARKER H. STARRATT**, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries*: ROBERT M. NELSON, 2446 Iroquois Road, Wilmette, Ill. ROBERT A. POISSON, 150 E. 73d Street, New York 1, N.Y.

• 1934 •

Brown University has recently established a course in oceanography and has appointed Raymond B. Montgomery as professor. Emphasis will be placed on physical oceanography and instruction in the course will be assisted by the staff of the Oceanographic Institution at Woods Hole. Ray has held several teaching and research posts at New York University and Scripps Institute of Oceanography at LaJolla, Calif. The course will include a study of marine biology, physical oceanography which is the study of currents and temperature distribution, the geology of the ocean bottom and chemical composition of the water and its contents.

Tom Hayden recently announced his candidacy for the Finance Commission of Norwood, Mass. He is now asso-

ciated with the Factory Mutual Insurance Companies in Boston as an appraisal engineer. — Dan Goodnow recently spoke to the Tech Club of the Medford, Mass., high school. Dan is now a safety inspector for a Boston insurance firm. — Milton G. McDonald has been appointed casualty actuary of the Massachusetts Insurance Department by the Insurance Commissioner, Charles F. J. Harrington, with the approval of the governor and council. He began in the insurance department as senior actuarial clerk in 1940 and was appointed assistant actuary in 1942.

Harry Rosen was speaker at the 4th Country Director's Conference of the Joint Distribution Committee, major American welfare agency aiding Jews abroad. The conference was held in Paris, France. Rosen attended the conference as adviser to the French-Jewish community and consultant to the French-Jewish Unified Fund for social work. He has been director of community organizations for the Joint Distribution Committee and is on loan to the French committee. — Ralph M. Guerke recently announced his candidacy for the township board of education in Newark, N.J. He is chief experimental engineer with Curtiss-Wright Propeller Division.

Kendrick H. Lippitt, Chief Engineer at Technical Appliance Corporation, Sherburne, N.Y., is presenting a paper on very high frequency and ultra high frequency antenna requirements before the Federal Communications Commission in the current hearings. Taco is developing and modifying antenna types for the region above 500 megacycles. An entirely new approach in design results in antennas having more gain and less cochannel interference due to high front to back ratio. — **JOHN G. CALLAN, JR.**, *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile, S.A.

• 1939 •

A nice letter was received from Irv Peskoe from which we have taken liberal excerpts as follows: "With deep joy," Irv reports that his three-year stint at law school is completed and that he is free once again to call his soul "my own." His two children, Danny and Riva Jean, five and eight, respectively, are enjoying residence with their parents at 2852 Southwest 22d Terrace, Miami, Fla. Also: "You might like to hear about a few classmates. Dave Morgan was one of my roommates in our senior year. He is now a big wheel in the International Manufacturing and Equipment Company, Inc., an outfit that does its best to get heavy American machinery into the hands of the oil and coal producers of our Allies. Another roommate was Howard Schachman, now a Ph.D. and an assistant professor at the University of California in Berkeley. Hoss is married and has one son. Dave is still single."

"Another classmate, Paul Comstock, is in Miami. Paul is now studying for his master's degree in chemistry at the University of Miami, is still single and still looking happy. Paul Sokoloff did make Miami his home during most of 1949 but

was offered a good job 'somewhere in Arizona' and departed, along with his wife and two children. There is also Jennings Braun who started with us but didn't graduate until 1940 because of illness. Jens is married, has one son, lives in the New Jersey suburbs, works as an industrial chemist, and is actually getting a master's degree through night studies." Many thanks, Irv, and all those with surnames beginning with the letter Q will now please write their similar experiences for next month's column.

From a Chemical News Bureau, General Electric Company release, we learn that Ernest O. Ohnsol has been appointed manager of the chemical process development of the chemical department of General Electric. Ernie has been with Standard Oil Development for the past 10 years and, as a development engineer there, he not only co-ordinated the efforts of the company's various laboratories but also served as adviser on research and development policies.— Jim Barton, at Boeing in Seattle, is also in line for congratulations, having recently been appointed as chief cost accountant. Jim was formerly senior cost analyst.— In the romantic department, two engagements have been announced: Fred Schaller is engaged to Anne Frances Knott; and Carl Behrsing is engaged to Lillian Marie Yukevitz of Jamaica Plain, Mass.— STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. GEORGE BEESLEY, *Assistant Secretary*, Whittemore-Wright Company, Inc., 62 Alford Street, Charlestown 29, Mass.

• 1942 •

We are pleased to receive news that Jerry Coe, our Class President, has been presented a joint Coffin award by the General Electric Company. This award—the company's highest honor to employees—was presented to Jerry and two of his associates for development work making possible the economical production of silicon compounds in large volume. Jerry went to work for G.E. on graduation and joined the chemical department in 1943. After three years of Naval service as a destroyer radar officer, he returned to General Electric and has been at Waterford since 1947; he is now in charge of the Waterford group of the engineering division's chemical process development section.

Our student newspaper, *The Tech*, which is certainly a fond memory to all of you, supplies the information that Steve Dodd has been instrumental in developing the tube which provides the "memory" for the Institute's new digital computer. Recently we ran into another '42 man returned to Technology—Frank McClintock has come back to the Mechanical Engineering Department as an assistant professor, bringing with him a wife and small daughter. For a change in the opposite direction, your Secretary, after eleven and one-half continuous years at M.I.T., is pulling up roots for a transfer to an industrial job. The change, involving a minimum of geographical disturbance, is to Tracerlab, Inc., of Boston, a new, fast-growing, and very promising concern working in the field of radioac-

tivity applications and instruments.

An article has come to us recently from the Salem, Mass., *Independent*, accompanied by an impressive photograph, to the effect that Dr. Robert S. Shaw has joined the Salem Hospital staff as a surgical resident. Dr. Shaw was graduated from Harvard Medical School in 1945 and, following internship at Massachusetts General Hospital, spent two years in the Army. He has recently been a resident at Massachusetts General and goes to Salem as a result of an affiliation program between the two hospitals.

Bernie Levere has written to say that he recently married Zelda Gordon, Smith '46, of Teaneck, N.J. Following a honeymoon in Palm Beach, they are making their home in Teaneck. Bernie was supported at the ceremony by Marty Levene, Lou Rosenblum, and Dick Seidman, all of '42.— There are four engagements to report this month; this represents an outburst of romance reminiscent of the class notes of a few years ago. Philip Hodgdon and Mary Louise Emery of Greenland, N.H., planned a spring wedding. David VanMeter, now an assistant professor of Electrical Engineering at Pennsylvania State College, is engaged to Mary Ann Kun of Budapest. Miss Kun holds a position in the Botany Department at Pennsylvania State College. John W. Lacy is engaged to Barbara Muther of Newton Center; and Edward Todd, who is studying at the University of Colorado, is to marry Barbara Wright of Rockport, a physicist in the research division of the United Shoe Machinery Corporation.— GEORGE M. KAVANAGH, *Acting Secretary*, 25 Eaton Court, Wellesley Hills 82, Mass.

• 1943 •

Mr. and Mrs. Edwin H. Stewart, Jr., are the proud parents of Michael Edwin Stewart who was born on March 5. The Stewarts now live at 2021 California Street, San Francisco 9, Calif. Bernard J. Lange, Jr., and the former Carolyn Montgomery were married at the First Presbyterian Church in Houston on February 3. Mrs. Lange graduated from the University of Texas after having attended Sweet Briar College. The wedding was followed by a reception at the Houston Country Club. The Langes now live at 1711 West Alabama, Houston.

The announcement has been made by her parents of the engagement of Anita Weinberger to Ralph R. Feuerring. The home of the bride to be is in New York, and she is currently at Elmira College. The wedding is planned for May. From East Providence, R.I., Alice Marie Dessert's family has announced her engagement to Richard P. Welcher who is with the American Cyanamid Company in their Stamford Research Laboratory. During the War, he was at Oak Ridge. His bride to be, a graduate of Pembroke College, is also a chemist, and strange as it may seem, with the American Cyanamid Company! No date for the wedding has been announced. From Wellesley, I have a clipping which announces the engagement of Barbara J. Lindberg and Carl O. Carlson, Jr. The future bride is a graduate of Westbrook Junior College, Portland, Maine, and the Chamberlain

School of Retailing in Boston. This couple is planning a spring wedding. In Savannah, Ga., it is announced that Ernestine Coren Bull and William R. Kittridge are engaged. Bill's future bride is a graduate of the University of Georgia where she studied landscape architecture. Bill is with the Southern Cotton Oil Company. A June wedding is the choice of this couple.

Two coeds figure in the class news this month. Both received degrees in the field of public health after graduate study at M.I.T. Margaret Murray Blizzard has recently been appointed chief co-ordinator of health education in the Massachusetts Department of Public Health. Prior to this appointment, Mrs. Blizzard was health education co-ordinator in the Boston Health Department. Beryl Roberts, who is a consultant in public health education and on the staff of the Massachusetts Society for Social Hygiene, is teaching health education at the Harvard School of Public Health. She has spoken at public gatherings on "The Importance of Sex Education for Children." In connection with this talk, she shows the film "Human Growth" which deals with the development of a child from birth to adolescence.— CLINTON C. KEMP, *General Secretary*, 29 Verlynn Avenue, Hamilton, Ohio.

• 1944 (2-44) •

The class gift insurance program has gotten off to a grand start thanks to the efforts of the working committee under the chairmanship of Bob Peck. I am sure that all of us want to do our best to reach the class goal of a \$100,000 gift for the 25th reunion. We will have more complete news on the project in the June issue of The Review.

Bob Oppenlander is now engaged to Jessie Major of Waltham, Mass. They are planning on a fall wedding. Francis Carey will marry Maryanne Dunn of Lynn, Mass., in June. He is now associated with the American Hide and Leather Company. Michael Vallone and Margaret Fectear of Exeter, N.H., are to marry in June. Donald Phillips and Ruth Gretzinger of Glen Ellyn, Ill., will wed in June. James Mavor and Mary Hartwell of Boston are engaged to marry. Jim is attending graduate school at M.I.T. Bob Buck and June Schirmer were married in Waban, Mass. Spencer Schilling has married Ruth Halvorsen. Your Secretary has also joined the ranks of the above. Eleanor Lassitor of Mineral Wells, Texas, and yours truly were married on April 23. We went to Acapulco, Mexico, for our honeymoon.— WILLIAM B. SCOTT, *General Secretary*, 3916 Potomac, Dallas, Texas. MALCOLM G. KISPERT, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

• 1944 (10-44) •

Dick Jorgenson is this month's guest editor. Last year he was in the Chicago office of the Reinhold Publishing Corporation selling advertising space for the American Chemical Society publications. This January, he was transferred to the Cleveland office, 630 Terminal Tower, from which he travels the Pittsburgh and Buffalo areas. This spring, Dick plans an

other transfer from Chicago of the future Mrs. Jorgenson. Dick writes of the friends he's heard of recently.

Malcolm P. Crowther: Mal and Nina, who celebrated their 5th wedding anniversary on the 10th of March, are living in Maumee, Ohio, which is just outside of Toledo. They have one son, Mac, who is approximately three. As a matter of fact, by the time anyone reads this, there will be another member of that family. They have a nice home at 535 Broadway, Maumee, and they certainly welcome all visitors. I've had many a good time there. Mal is with Glass Fibers, Inc., which is just down the road towards Napoleon. He's doing a variety of work, including research and development, production and sales; has a couple of pet projects that keep him moving around the country occasionally. He is keeping himself in shape by being active in the Navy program. You can take that literally since he's playing basketball with the boys. He took in that easy life the Navy offers all of us down at Key West. That was in January, and he said it agreed with him completely. Mal went back to Lehigh in 1946 and graduated from there in June. He has been with Glass Fibers, Inc., since.

Theodore Hellmuth: The last time Ted was seen was at the Chemical Exposition in Chicago back in 1948. We ran into each other at the hot-dog stand. It turned out that Ted was with St. Regis Paper Company, and was on their sales force selling packaging machinery. Since that time, he was transferred to Cleveland long enough to get himself engaged at Christmastime in 1949. But now, you will find him working out of St. Louis, which is his home town. Ted finished up at Lehigh, too. — Stanley M. Brown, Jr., '47: Stan and Lil celebrated their 5th anniversary in March. They have two wonderful sons to show to anyone who stops in to see them at their home in Southington, Conn. Stan went back to Technology after his discharge from the service, and that's the place from which he graduated. Since then, he has been working with the New Britain Machine Company.

Gregory F. Walsh, Jr.: Greg and Jody were married at Christmastime back in 1947, and they now have a son in their family. Greg was one of the few Lehigh men to graduate from Technology while up there. After leaving the service, Greg spent some time with U.S. Gypsum in New York City and with Glenwood Range in Taunton, Mass. Of late, he has been on the sales force of the New Jersey Machine Company in Hoboken. You'll find that he'll be glad to help anyone having a need for labeling machinery. They reside at 85 Grand Place, Arlington, N.J. Bill is staying very active with the Navy program, and manages to work in his two-week cruise every year. — Frank L. Strobino '47 lives with his wife down in Dayton, Ohio, where he is connected with the General Electric Supply Company. — There's plenty of Technology and Lehigh material coming up for the future.

Add two more 10-44 men to the marriage roles. On February 12, Bill Pearson wed Barbara Ann Crowley of Weston and Jackson colleges. He had recently graduated from Tufts and will work with

the Pearson Corporation in New York City. February 24 saw Hank Tillson married to Helen Mary Hannan of Pennsylvania State College and Lawrence, Mass. They will live at Penn State where Hank is studying for his doctorate. — Engagement announcements: Lucille Coscia of the University of Pennsylvania and Philadelphia to Michael Pelosi, Jr. Annabelle D. Cook of Wellesley College and Baltimore to John H. Kellogg, Jr. — Remember, you're invited to the cocktail party in my suite at the Hotel Statler on the afternoon of Alumni Day, Monday, June 12. — JAMES S. MULHOLLAND, JR., *General Secretary*, Reinhold Publishing Corporation, 330 West 42d Street, New York, N.Y. *Assistant Secretaries*: RODERICK L. HARRIS, 2873 South Buchanan Street, Fairlington, Arlington, Va.; JAMES B. ANGELL, M.I.T. Graduate House, Cambridge 39, Mass.

• 1946 (2-46) •

After the sparse news of the last issue of these notes, the picture has been brightened for this month by the influx of a considerable number of items. The first of these is the marriage of Gifford Stanton to Sally Lenderking of Great Neck, L.I., on January 15; and at a ceremony in the Shadyside Presbyterian Church on December 26, John Fleming and Cleo Passauer of Oil City, Pa., were united.

Engagement announcements include that of Carlton McDonald and Mavis Fox of Keweenaw Falls, Maine. Carlton was graduated from the United States Naval Academy in 1947, and recently finished studies at a United States Naval submarine school in New London. Ensign John Metcalf and Helen Waterman of Albany became engaged in January. John is another graduate of the Naval Academy. Jack Aitken and Marjorie Doxrud of Philadelphia announced their engagement last Christmas. Jack is doing graduate work at the Wharton School of the University of Pennsylvania. Other engagements include those of Lou Kishel, at present a teacher in Westport, Conn., and Gloria Karber of New Haven; Albert Kramer and Elise Wollenweber of Oakwood Heights, Staten Island; and Chuck Dobony and Margaret Backer '48 of Belmont. Chuck, a midshipman at Annapolis, was recently appointed brigade commander of midshipmen.

Bill and Rosamond Becker became the parents of a daughter, Diane Linda, on February 3 — she's now on display at 2230 Elm Street, Manchester, N.H. Word has been received that Bill Herberg is in Houston with the Federated Metals division of American Smelting and Refining Company. Hugh Jackson is one of 32 scientists enrolled in a course on radioisotope techniques given by the Oak Ridge Institute of Nuclear Studies. Hugh is with the Atlantic Refining Company and plans to use these new techniques in petroleum research. — JAMES S. CRAIG, *General Secretary*, 387 Harvard Street, Cambridge 38, Mass.

• 1948 •

Weddings and engagements still dominate the news that comes to your Secretaries through the clipping services. Let's first take a look at the weddings that have

been reported. In Lynn, Mass., Agnes Leondires married George N. Fountas; in Quincy, Mass., Jean MacKenzie married F. Mansfield Young; in Boston, Beverly Ann Tibbetts married Granville Bruce Kline; and in Brockton, Mass., Jeannette Mostrom became the bride of Russell Bricknell, 6-45. There are a number of engagements to report: Zelda Sofman of East Orange, N.J., to John Walch; Marjorie Gautreau of Cambridge to William A. Allen; Gretchen Van Tassel of Scarsdale, N.Y., to David Shaw; Nancy Jean Brown of Salem, Ore., to William Kautz; Maria DiMeo of Everett, Mass., to Joseph Salerno; Ruth Sachs of New Haven to Nelson Alpert; Alice Hale of Franklin, Mass., to Merle Andrew; and Joan Landis of New York to John Weil.

We have more reports from members of the Class concerning their whereabouts and jobs. We shall continue to relay them to you as long as they come in the mails. Sherwood Fox is now living in Malden and he works at Arthur D. Little, Inc., in Cambridge on chemical engineering work. Bob Shooshan is working for Pratt and Whitney in East Hartford. He works with John Connors '47 and on week ends he enjoys square dancing and hiking. Robert H. Jenkins works for Johns-Manville in Illinois as an industrial engineer. Murray Goddard is teaching physics and doing research at Case Institute of Technology in Cleveland. Roy Brakeman is located at the El Segundo refinery of the Standard Oil Company in California. He is learning the financial end of the business by doing controllership work. Marvin Campen and Thron Riggs also are with Standard in California. Bob Giljohn is working for Sheffield Farms in Norwich, N.Y., as a chemist and he is doing some scouting work on the side.

Arthur Renz is living in West Peabody and he works for the Pope Machinery Corporation of Haverhill in sales engineering work. He is rebuilding a 100-year-old home. Charles Steffens is at Pratt and Whitney as an analytical engineer. He lives in Hartford. Ned Eacker is living in Detroit, Mich., where he is a servicing engineer for the Liberty Mutual Insurance Company. James Theodosopoulos is living in Manchester, N.H., where he works for Textron as a plant chemist. Don Sencenbaugh is a Naval officer and at present he is stationed at the New London Submarine Base. Stanley Abkowitz reports that he is working for the Foster Grant Plastics Company of Leominster, Mass. He is training as assistant to the plant engineer. That is all of the news for this issue, but by the time June rolls around, we shall have more for you. — WILLIAM R. ZIMMERMAN, *General Secretary*, The Kurt Salmon Company, Inc., 3000 Albermarle, Washington, D.C. RICHARD H. HARRIS, *Assistant Secretary*, 19 Lancaster Street, Worcester 2, Mass.

• 1949 •

John Cowley returned to Goodwood, Australia, to continue his work with C.S.I.R.O. A letter from Raffaele Belluardo reports the arrival of a six-pound 11-ounce daughter, Suzanne. The annual Tech Show enticed Jim Berman away from New York for the week end. Art van Stolk, who coauthored the book before

he left, sent the cast a potted tulip from Holland. — The files of the Harvard Business School reveal the following sixteen '49 men: Marvin Asnes, Milt Bevington, Bob Breese, Eugene Clark, Russ Cox, Joe Day, Brad Endicott, Dave Gaillard, me, Otto Kirchner, George Loomis, Bob Nesbitt, Mariano Ospina, Bill Smith, Jack Tang and Kemon Taschioglou.

Engagements: Donald Hansen to Muriel Hammonds of Middlebury, Conn. Edward Hyde to Margaret O'Neal of Hillcrest, Del. Ed is with Du Pont in Victoria, Texas. Robert Murphy'48 to Olga Magasy of West Roxbury, Mass. Alan Postlethwaite to Mary Machlup of Belmont, Mass. John Walch'48 to Zelda Sofman of Hillside, N.J. Paul Winsor'48 to Ann Wendell of Wayne, Pa. Robert Andrew'48 to Myrtle Sawyer of Saco, Maine. Bob is with Raytheon Manufacturing, Waltham, Mass. William Beaton to Mary MacGilvera of Wellesley Hills, Mass. Lloyd Marshall to Patricia Kuhn of Plainfield, N.J. He is with Dayton Malleable Iron Company, Dayton, Ohio. Richard Cotton to Joan Katzman of Brookline,

Mass. Dick did graduate work at the University of Zurich and is now with Tracerlab, Inc. John Henry Dalton to Elizabeth Wise of Akron, Ohio. George Felbeck to Mary Nichols of Dedham, Mass. Paul Gadebusch to Janet Lenfestey. Paul is with Socony Vacuum.

John Gulick to Gretchen Frey of Braintree, Mass. J. Stoness Harford to Dora Seavey of Boston. Robert Hinrichs to Dorothy Chapman. William Jackman to Lillian McAllister of Cranston, R.I. Otto Kirchner to Madeline Foote of Concord, Mass. John Lubin to Jean Dodge of Reading, Mass. John is teaching at the Wharton School. Lawrence Manoni'48 to Barbara Roser of Hartford, Conn. He is in the research division of United Aircraft in Hartford. Kenneth McGrath to Marjorie Wiekling of Minneapolis. Warren Obes to Janet Hughes of Manhasset. He is with Anderson and Beckwith, architects, of Boston. John Redpath to Stephanie Bunting of Albany, N.Y. Richard Reed to Joan Murry of Quincy, Mass. Horton Shaw to Martha Ware of Washington, D.C.

Weddings: John Murdoch to Kathryn

Keenoy on February 11 in Bloomfield, N.J. Joseph Hadzima to Katharine O'Meara on December 8 in Fresno, Calif. Archie Harris to Audrey Miller on January 14 in Malden, Mass. They will live in Cincinnati where Archie is affiliated with General Motors. Harry Madden to Mary Murphy on November 12 in Jamaica Plains, Mass. They will reside in Providence. Wallace McKinnon to Gladys Lavin on December 26 in Leominster, Mass. Garland Sydnor to Joyce Hunnfield on November 12 in New York. They will live in Richmond. Rush Taggart to Dorothy Harris on November 5 in Cheshire, Conn. John Stevenson ushered. Adriaan van Stolk to Elizabeth Reichard on November 5 in Princess Anne, Md. Jim Berman and Tom Hilton ushered. Erskine White to Eileen Lutz on November 5 in Warner, N.H. John Wylie to Christine Mehlmann on November 20 in New York. Tom Hudson was best man. John is attending the Columbia Graduate School. — CHARLES WILLETT HOLZWARTH, *General Secretary*, Morris C-36, Harvard Graduate School, Soldiers Field, Boston 63, Mass.

ALUMNI DAY, MONDAY, JUNE 12, 1950

Here's your chance to:

FIRST — visit with Alumni and Faculty at one of the Departments holding reunions and forums. 10:30 A.M.

SECOND — enjoy luncheon in Du Pont Court with friends and family. 12:30 P.M.

THIRD — attend the Symposium on "ACCESS TO IDEAS — Is Reading Obsolete?" in the delightful air-conditioned Charles Hayden Memorial Library. 2:30 P.M.

FOURTH — meet President and Mrs. Killian at their Open House for Alumni and guests attending the Day's events. 4:00 P.M.

FIFTH — gather with classmates and friends for informal reunions at the Copley Plaza. 5:30 P.M.

SIXTH — the grand Alumni Banquet, Copley Plaza. Pick up your stein in person. 7:00 P.M.

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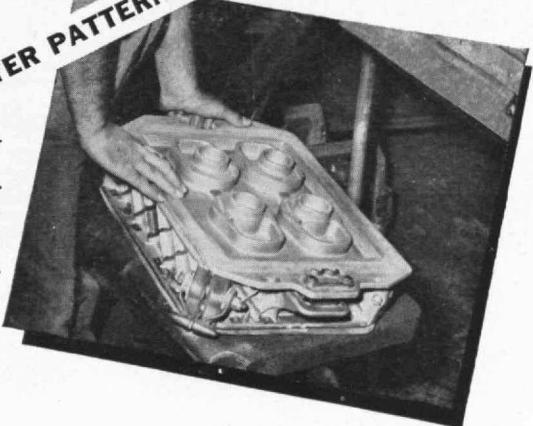
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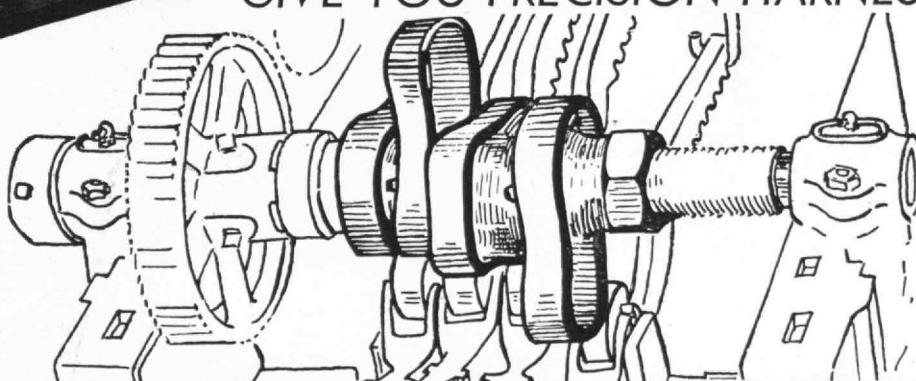
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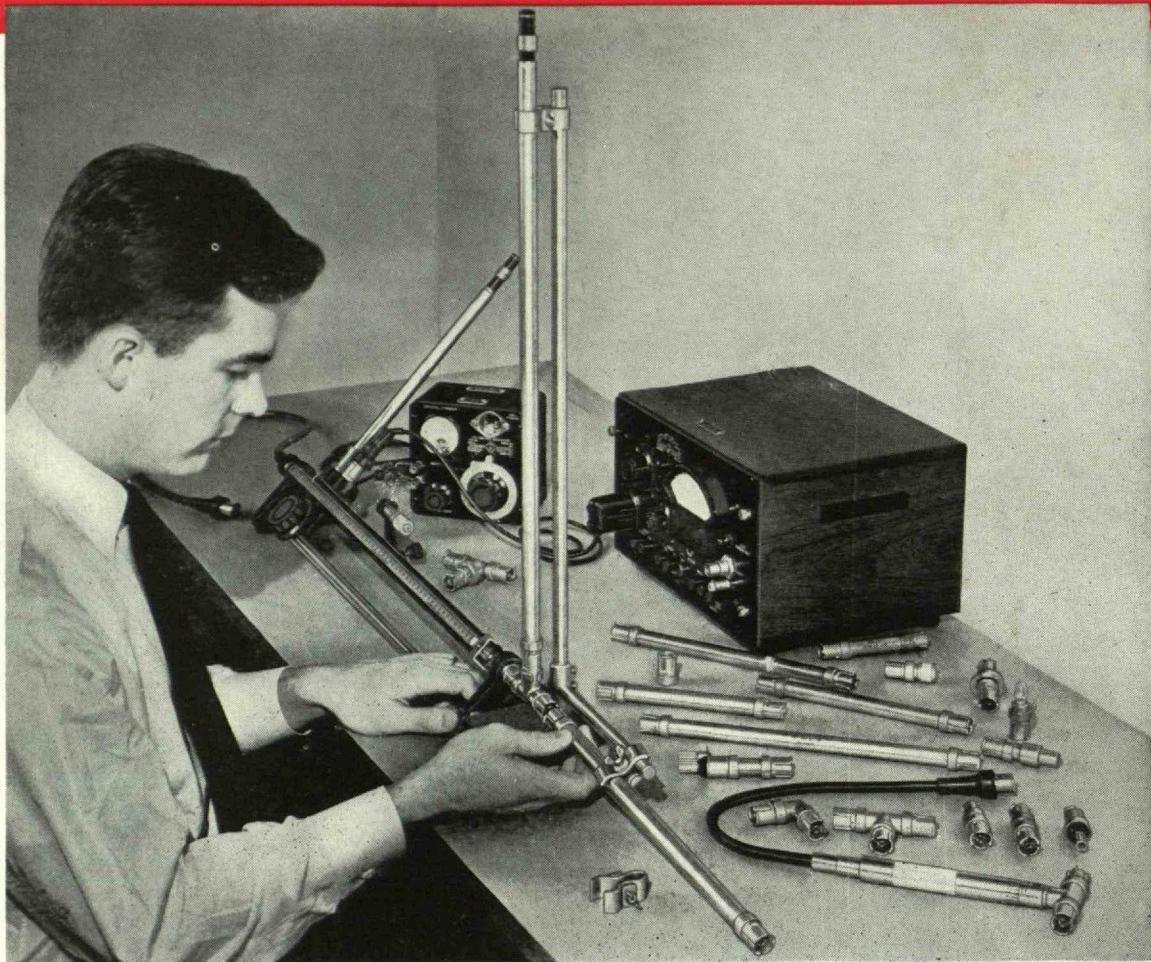
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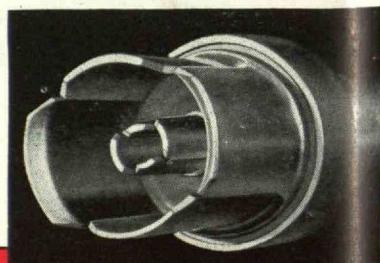
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